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The *BB&T* interview:

Robin Bellas

VENTURE CAPITALIST

'Aging gracefully defines our investment strategy.'

Interview by JIM STOMMEN, *BB&T* National Editor

Robin Bellas is a partner in **Morgenthaler Ventures** (Menlo Park, California), a prominent life sciences venture capital firm. He joined Morgenthaler in 1983 after 10 years of management experience with emerging growth companies. Bellas has spearheaded the firm's investment in life sciences companies and serves on the boards of 10 current portfolio companies, with previous service on the boards of numerous firms subsequently acquired by larger med-tech companies.

He is a past director of the **Western Association of Venture Capitalists** and of the **Stanford Business School Trust**. A 1966 graduate of the **U.S. Naval Academy**, he served as a line officer on nuclear fast attack and nuclear missile submarines before receiving his MBA from **Stanford Graduate School of Business** in 1973.

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Biomedical Business & Technology: How does a recessionary economy — or something much like it — impact venture investing in general, and life sciences investing in particular?

Bellas: I had a good case study of that over the past two weeks, because in week one, my company, **IPC-the Hospitalist Company**, was on a road show and everything was falling apart. The economy was declining, the stock market was declining, and everyone was worried about what was going to happen. And then last week, the Fed took the pre-emptive move, a 75 basis point reduction on interest rates on Tuesday morning, right after the holiday, and the market went back up and then the expectation was that the Fed was going to reduce by a half-a-point, which they did yesterday, so we priced the IPO within the filing range, which is highly unusual for IPOs within this volatile market.

The point is that companies with revenues and profits are always going to be able to go public, no matter what happens in a recession, but for two-thirds of our exits being strategic exits in sales to larger companies, that continuing market will always exist. and it's pretty much the IPO markets that get impacted by recession. So we'll be able to continue to be able to do our exits through sales to large buyers. That will continue regardless of the economy, because the large buyers have needs to fill their product pipelines. But we will see an impact on our IPO ability to get financing for the companies.

Now, when you tie healthcare to the concept of the pig going through the python, and the Baby Boomers being such a large generation in need of healthcare, despite the recession, there will always be a demand for the variety of products that improve the quality of life, both devices and drugs. So there should be less effect on the healthcare market during a recession than on other markets.

BB&T: It seems to me that we talk so much about demographics powering the companies that you work with. Is there a tendency to overstate that, or not? Is it simply that is what powers the growth in this field?

Bellas: If I were at the whiteboard and painting a picture for you of the effects of demographics on our investment strategy, I'd say that for the past decade, our investment strategy has been driven by the concept of graceful aging. So, we're really investing in new-product companies — both drugs and devices — that assist this big old Baby Boom generation in aging gracefully. On the device product side, for example, think of all the products that help you look better and feel better so that you can continue to play tennis until you're quite old. On the drug side, think of all the products that assist with lifestyle, like Viagra, or assist

with cholesterol control, like Lipitor, that allow you to remain healthy. So the whole point is to not decline in health as you age, but rather, to sustain health. And then drop dead, you know, when Mother Nature says it's time to go, after having been active in your elder years.

So graceful aging really defines our investment strategy. A complementary strategy which we've used for the past decade has been surgery without knives, and we've actually invested in companies that now perform what used to be nasty surgical operations using medical devices, we're able to do them without cutting because we're using different points of access. In short, yes, demographics does drive quite a bit of our investment strategy.

BB&T: Give me some examples of surgery without knives. I remember you talking about surgery without knives during one of your roundtable programs held during the time of the JPMorgan meeting in San Francisco.

Bellas. Yes, we did cover that a couple of years ago. I guess the oldest company in our portfolio, now public for a couple of years, is **Thermage** [Hayward, California]. They do the facelift, using RF energy to shrink the collagen under your skin. We've sold our stock, so we're not involved with the company any more, but it's been a procedure that's been successful in shrinking the collagen and producing fresh collagen, which smoothes the surface. So that's one example. A more recent example is a company we have called **Satiety** [Palo Alto, California] you might remember that one.

BB&T: Yes, I was going to ask you about Satiety. That would seem to me to be in a sweet spot right now.

Bellas: Satiety's clinical data looks real good. Now, everybody's pronouncing that we have an obesity epidemic, and Satiety's clinical data, has shown that at the six-month mark now, heading toward a year, that patients have lost, I think it's up to 46% of their excess weight, and it's staying off because of the ability to go down the esophagus and re-size the stomach and create a smaller pouch in the stomach using the Satiety device. So the combination of switching that procedure from nasty surgical procedure to an outpatient procedure in a physician's office has really perked up the patient population.

The original patient target, of course, was the clinically obese patient that absolutely needed to lose weight for his or her personal health. An emerging market, which we thought could emerge, is the whole vanity market, where someone says, 'I've got a major college reunion coming up next year; I'm going to go have the Satiety procedure and lose 50 pounds.' And

those two markets combine for the potential to develop a billion-dollar company.

BB&T: At a couple of American Diabetes Association meetings, I've heard presentations, from the perspective of the diabetes-related doc, touting gastric bypass surgery as a great aid in diabetes, so I would think that Satiety's approach will fit very well in that argument as well.

Bellas: Well, they both accomplish the same result, except the patient doesn't have to go through a horrible open surgical procedure with the Satiety procedure, unlike bariatric surgery. The results have been good.

There has just been a recent *New England Journal of Medicine* article talking about the disappearance of diabetes in obese patients who have lost their excess weight. The article talks about how the co-morbidities go away just by themselves without treatment as you lose excess weight. Those include, obviously, orthopedic pain, so the weight on your joints diminishes; diabetes, because obviously your lipids are dramatically reduced when you lose a lot of weight. All the co-morbidities of hypertension, where obese patients sometimes have trouble exerting themselves, shortness of breath, all those things sort of go away as you become a bit more healthy.

Let me tell you about one other type of patient that's benefiting also. We have a company called **Emphasys** [Redwood City, California]. This is for . . . lifelong smokers who have developed emphysema. With emphysema, you know, your chest expands, you're breathing at the top of your lungs, every breath is difficult, you can't walk or hike because you can't transport the oxygen in. And the old solution used to be to cut open the chest, pull the lungs out and use a soldering iron to cut off the bottom lobes of the lungs, where the tar resides, and the diseased tissue, then put the lungs back in the chest and close up.

Emphasys has developed a little duck-bill valve — if you can think of a valve that lets air in one side, then has a long, duck-billed shaped piece of rubber on the other side. It allows the air to escape from the patient's chest, thus allowing the heart and the diaphragm and lungs to move back into their normal positions. And then over time, by preventing fresh air from coming in, the diseased portion of the lungs, the body naturally necroses the diseased tissue and you're able to restore lung function.

The company has completed its pivotal trial here in the U.S., with beautiful data that's statistically significant, so they're in front of the FDA soon for panel approval and are planning a public offering. And they did several hundred patients — I think it was almost 300 patients — in their clinical trial. So now emphysema patients have a noninvasive solution — in going

through the airway, you avoid cutting, and it's an outpatient procedure in a doctor's office.

BB&T: Are respiratory and pulmonary diseases a hot area, kind of a growth area, kind of a hot area for venture investing?

Bellas: Again, it is because the Baby Boomer generation which used to smoke a lot of cigarettes, is kind of like the World War II generation, where people smoked for fashion in the 1950s and 1960s. Yes, there are a lot of emphysemic patients out there.

BB&T: I want to know what you would choose as one of the most surprising areas for VC investing in life sciences over the period you've been involved.

Bellas: Probably most surprising to me is the difference between medical device investing and biotech investing. There are two surprises there. One surprise was that the large pharmaceutical companies often take a decade or more to develop a new drug. In our venture business, we've been able to do that in a reduced amount of time by focusing on diseases that have very discrete clinical end-points and very short clinical trials.

We take these indications that allow more rapid clinical trials and end-point results. This has been important to the large pharmaceutical companies, because they are so focused on consolidation rather than research. The result has been that the number of drug approvals for pharma companies has been declining, and the number of drug approvals from biotech has been rising. That crossover occurred in 2002 and now you've got twice as many.

The surprising result of all that has been that the large pharmas are using their cash flow to buy our little biotech companies early, to add those product platforms to their R&D groups. It's been very rewarding in the venture business because we've been able to sell pre-clinical companies, pre-revenues obviously, for several hundred million dollars, whereas before we had to develop them all the way to Phase III clinical trials.

The other surprising thing on the med-tech side is that by creating new companies within our incubators — **The Foundry** (Redwood City, California) and **ForSight Labs** (Menlo Park, California) — do rapid prototyping in developing new medical devices and then getting them into humans early, surprisingly we've been able to get very large step-ups in valuation in the follow-on financings from our colleagues, many of whom are doing later-stage med-tech investing.

BB&T: Let me jump to that question. How do the Foundry and ForSight Labs go and find the good

ideas, and how do you incorporate those ideas into as full-scale company development program?

Bellas: The “secret sauce” at our incubators is the management team. The folks at the incubators used to be CEOs of our portfolio companies and produced very significant capital gains for their investors, so they’re trusted. And now they have a national reputation for having created successful companies in the past. It turns out that the deal flow comes to them.

The entrepreneurs know of their background and history, they know of the success of The Foundry, so they bring their business plans early to The Foundry and ForSight Labs executives for review, asking, “Hey, how do we shape this up and go raise venture capital?”

So The Foundry guys get to see the plans — or lack of plans — one step earlier than we do. And that way they get to review all the hundreds of fresh new ideas, and then when we fund a new company at The Foundry, we spend the first year sorting through all those opportunities before actually deciding what to pursue. And then we go get some clinical data, and then a new investor comes in and leads the Series B round, and then we give the company a name and hire a CEO. So the incubators are magnets for entrepreneurial deal flow.

BB&T: What’s more important, the idea or the people? The people at the level of the incubators, that’s really as important — and maybe more so — than the people you end up enlisting to run the companies that you’re investing in.

Bellas: Well, they’re both equally important, but at different stages of the company’s life. When you say incubator, a lot of people think you’re just renting out space. You’ve got good engineers that are on staff, you’ve got a machine shop in the back, you’ve got a couple of managers who used to run portfolio companies, and you’ve got the board of directors, and everyone is brainstorming about where the next good idea is coming from. The chief engineer at The Foundry has a hobby of going through old medical texts and finding these old surgical procedures, and then he invents less-invasive devices to replace the old procedures.

That’s really very cool. We’ve got a hot young company called **Ardian Medical** [Menlo Park, California] which is doing renal enervation for hypertensive patients and congestive heart failure patients. When you have CHF, the hormone signal from your brain tells you kidneys to hold water and salt back to increase the volume in your blood vessels because the heart’s having trouble getting adequate blood flow out to the organs. That results in an even tougher load on the heart, so by “tricking” the kidneys into contin-

uing to de-water the patient, you actually help the CHF patient and allow the heart to remodel back into the football shape.

This is just so amazing. These ideas often are generated by the guys at The Foundry as we sit around the board table talking about, what have you seen or what have you thought about that’s new and exciting?

BB&T: So which is more important, the idea or the people behind it?

Bellas. I’ve often heard the phrase, “We don’t finance inventions, we finance companies.” We get approached by a lot of inventors who have cool inventions, but the invention isn’t enough — you’ve got to have people there to execute on the plan. We usually decline inventors who have a cool idea. Rather, we go to universities and out-license technology from a group at a university then create a management team around it. You need both in a successful company, but the invention or the idea itself is worthless without the successful team to execute the strategy.

BB&T: Is there a life cycle for the CEO who comes in to take the idea and move it forward?

Bellas. Very much so. We think of it in terms of sort of an automobile gearbox. Some of our start-up entrepreneurs have a first, or a first and second, gear, but no way do they have a third or a fourth gear. So often you’ll see that start-up executives who are good at getting things going quickly to grow, but once you get up toward the \$100 million revenue mark, sometimes you need people who have the experience of running \$100 million+ companies, who have a different view on life and are capable of taking companies to public offerings.

It’s rare to find an entrepreneur that has all the gears in the gearbox. We have across our history replaced about 50% of our CEOs because often they realize they don’t have the gears in the gearbox to take it to greater growth.

BB&T: What’s up next?

Bellas. We think lifestyle medicine is something that’s very hot. Aesthetics, for example. We recently started a company at The Foundry which is focused on excessive sweating. It turns out there are a couple million people in this country who suffer from excessive perspiration.

We’ve developed a way to ablate the sweat glands in the armpit. This emerging market is called “hyper-hydrosis.” This is one example of the continuing thrust toward looking good and feeling good. Lifestyle medicine sector is a high-growth area.

BB&T: How about ophthalmology?


Bellas. We started this second incubator, **ForSight Labs**, because there are a lot of unmet medical needs in the eyeball to address diseases of the eye. We're continuing to look at interesting areas in ophthalmology.

There are important challenges to be met. We think the ophthalmology area is rife with opportunity.

BB&T: What haven't I asked you that you wish I had?

Bellas: There's this interesting trend among the venture firms that are financing med-tech companies after a significant IT emphasis in the 1990s, to come

back and add partners to invest in healthcare. What has been surprising to me is the amount of capital that has been flowing into the med-tech universe, and the percentage of that being applied to later-stage investing, so we early-stage investors have been almost without exception been able to get step-ups in valuation in follow-on financing rounds with human clinical data. That's the critical part — you've got to have some human clinical data to convince the new investor that this concept actually has been proven.

First of all, it's the flow of money. Secondly the emphasis on later-stage investing and therefore the ability for our incubated companies to obtain follow-on financings, with such high demand from investors. It's been interesting, and something I wouldn't have predicted. 

Ophthalmology rides a growing wave in IOL market sector

By LARRY HAIMOVITCH
BB&T Contributing Editor

WAIKOLOA Hawaii — The annual Hawaiian Eye Meeting, held recently at the stunning Hilton Waikoloa Resort, experienced record attendance, as specialists from today's three critical areas of ophthalmology — cataract, refractive and retinal surgery — came from all over the U.S., attracted by the opportunity for education and just as obviously the chance to relax in the sunny and warm weather.

**BB&T
at the 2008
Hawaiian Eye
Meeting**

As the meeting got underway, course participants were greeted with the news that **Bausch & Lomb** (B&L; Rochester, New York), recently purchased by the private equity firm **Warburg Pincus** (New York) for \$4.5 billion, was acquiring privately-owned **eyeonics** (Aliso Viejo, California). Although the purchase price was not disclosed, the conference was abuzz with speculation about a premium upfront cash payment and a potentially large earn-out based on future sales performance.

eyeonics has been enjoying tremendous growth recently with revenue for the year ended Dec. 31, 2007, of \$34 million, virtually doubling the prior year's revenue.

The success of eyeonics' is partly attributable to the deft leadership of its co-founder and CEO Andy Corley, with virtually all of its revenue generated in the U.S. With purchase by B&L, this will likely lead to accelerated adoption of the crystalens IOL, given the

ophthalmology giant's global sales and marketing reach and its venerable brand name.

With the B&L acquisition, Corley will become its domestic surgical business president.

After the deal was unveiled, Corley noted that "through the extensive Bausch & Lomb sales and marketing organization, we expect to quickly and significantly expand the appreciation for the distinct patient benefits offered by the crystalens. We believe Bausch & Lomb's deepened commitment to ophthalmology will further drive the crystalens IOL's market acceptance as well as growth of the entire surgical product portfolio."

Competing against two of the industry's giants **Alcon** (Fort Worth, Texas) and **Advanced Medical Optics** (AMO; Santa Ana, California), as seen in **Table 1**, eyeonics has more than doubled its share in the premium refractive intraocular lens (IOL) market in the past two years, reaching an estimated 30% by year end 2007.

Growth path for IOLs rapid

This IOL market sector, which includes Alcon's ReSTOR and AMO's ReZoom multi-focal IOL brands, has been growing rapidly in the past few years. And Eyeonics has benefited from the November 2006 launch of its second-generation accommodating IOL, trade-named the crystalens Five-0, along with a sharp increase in its own sales force and the disenchantment among some surgeons and their patients with the clinical performance of ReSTOR and ReZoom.

The Five-0 features a slightly larger diameter optic than its first-generation lens with rectangular plate haptics that allow for greater movement of the lens. It is also easier to implant and more stable within the capsule.

At the **American Academy of Ophthalmology** (AAO; San Francisco) meeting in New Orleans last November, eyeonics introduced its third-generation

IOL, called HD-100. eyeonics is currently awaiting final FDA approval, based upon a PMA supplement filing last year.

The HD features a proprietary optics design that incorporates a small aspheric surface in the center of the optic. This appears to increase the depth of focus and, more importantly, improve near field reading vision.

The design of the HD has thus corrected the only major deficiency of eyeonics' earlier products, which provided excellent intermediate (computer distance) and far vision but were mediocre in the near field.

In a talk titled "Update on the crystalens Five-0 Accommodating IOL," Richard Lindstrom, a renowned cataract and refractive surgeon from **Minnesota Eye Consultants** (Minneapolis) and an adviser to several ophthalmic companies, noted outstanding clinical results in a recent small HD clinical trial. He reported that about 80% of the HD patients were enjoying superb reading abilities, while retaining excellent intermediate and far vision as well.

Lindstrom also said that HD patients are enjoying vastly improved contrast sensitivity (CS). (CS measures the ability to see details at low contrast levels and measures two variables: size and contrast.)

On the other hand, visual acuity, which is typically how devices are evaluated, measures only size.

In recent years, the ophthalmic community and the FDA have recognized the importance of CS as a true proxy for the efficacy of an IOL, and all IOL clinical trials incorporate contrast sensitivity as part of the trial requirements.

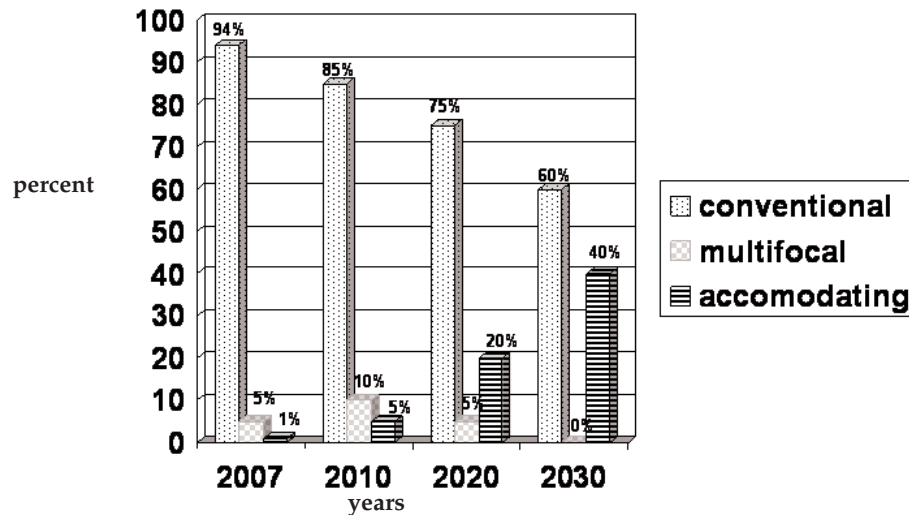
Touted: superior results

At an eyeonics-sponsored breakfast at the AAO meeting in November, Jay Pepose, MD, of **Pepose Vision Institute** (St. Louis), discussed this topic in detail, saying that both monocular and binocular testing revealed higher CS in eyes with Crystalens than either the ReSTOR or ReZoom lenses.

Concluding his talk, Lindstrom said, "I have no doubt that the HD provides superior results for my patients."

Taking a somewhat controversial position, especially considering his role as a consultant to both Alcon and AMO, Pepose asserted, "I am going to switch all my future patients to the accommodating [i.e., eyeonics]

Table 1
Domestic IOL Market Projections (in units, not dollar revenue)



Source: Richard Lindstrom, MD, presented at the Hawaiian Eye 2008 Meeting

IOLs and will not be using the multi-focal lenses anymore."

Lindstrom's comment are interesting to note relative to the sentiment of his colleagues.

A physician survey conducted at last year's **American Society of Cataract and Refractive Surgeons** (ASCRS; Fairfax, Virginia) asked the question "Which (presbyopic IOL) do you want in your eye?" The most popular choice was crystalens at 43%, followed by the Synchrony lens (discussed below) at 33%, followed by ReSTOR at 16%, ReZoom at 8%.

At last year's AAO, physicians were surveyed and asked two questions: "What is your most frequent choice today for presbyopia correction of cataract patients?" and "What do you expect will be your most frequent choice in ten years for presbyopia correction of cataract patients?"

The No. 1 choice today is multifocal IOLs but these lenses are expected to drop to number three in ten years, with accommodating IOLs expected to be the market leader

Another accommodating IOL is the Tetraflex, manufactured by **Lenstec** (St. Petersburg, Florida). According to Tetraflex's principal investigator Paul Dougherty, MD, of the **Jules Stein Eye Institute** (Los Angeles), who presented here, this lens provides excellent vision and "has become my lens of choice for all my cataract patients."

Tetraflex is a foldable acrylic lens that is easy to implant and is providing patients with excellent distance vision and enhanced near vision, compared to a standard IOL.

Lenstec recently completed enrollment in its domestic pivotal trial and will file a PMA application in

the first half of 2009 after the FDA's required one-year follow-up. This lens has the CE mark and is currently being sold in Europe and in several other countries.

Another accommodating lens, not specifically discussed here, is the Synchrony IOL developed by privately-owned, venture capital-backed **Visiogen** (Irvine, California).

The Visiogen device features a unique dual optic lens system with an easy-to-use pre-loaded injector. Synchrony has obtained a CE mark and in 4Q06 completed enrollment of its pivotal trial in the U.S. Based on that timeline, the company expects that it could be filing a PMA application in late 2008 or early 2009.

Excellent clinical data has been presented on Synchrony at prior ophthalmic surgical meetings, and it appears that this lens will become a significant competitor in the premium IOL space.

In another presentation later in the week, Lindstrom spoke on the topic of "Multifocal and Accommodating IOLs: Summary and Thoughts," saying that he expected accommodating IOLs to "become the preferred option in the future." As shown in **Table 2**, he predicted that accommodating IOLs — which accounted for a miniscule 1% of all IOL implants in 2007 in the U.S. — will rapidly garner market share in the coming years.

The key to Lindstrom's projection is improved technology, which will lead to better "accommodative amplitude." The premium IOL segment, which broadly-defined includes multi-focal and accommodation IOLs, as well as toric, aspheric and phakic lenses is boosting the growth of the global IOL market.

The Jan. 9, 2008, issue of *Ophthalmic Market Perspectives*, published by **MarketScope** (Manchester, Missouri), noted that worldwide premium IOL market unit sales have more than doubled in the past two years, and that, as noted in **Table 3**, 2007 worldwide premium IOL dollar revenue jumped nearly 28%.

	Q1	Q2	Q3	Q4
2006	14%	16%	16%	15%
2007	19%	26%	29%	30%

Source: eyeonics company reports, SEC filings and MarketScope

Conversely, the conventional or monofocal global IOL market grew less than 5% last year.

Opportunities in the retinal arena

Although the cataract and refractive sessions at the meeting were much larger than the retinal sessions, there was a lively and separate meeting for physicians focused on this specialty.

After being a moribund sub-specialty for many years, since the year 2000, there has been renewed vigor in the retinal world. The reason is simple — the introduction of three new medications for the treatment of age-related macular degeneration (AMD).

AMD is a degenerative eye condition associated with aging, and afflicting about 18% of those between 70 and 74 years old, then surging to 47% among those 85 and older. It is a chronic, progressive disease of the macula, the central part of the retina, causing irreversible loss of central vision and the No. 1 cause of severe vision loss and blindness among those over age 50 in the developed world.

With each successive introduction, beginning with Visudyne in 2000, followed by Macugen in late-2004 to Lucentis in mid-2006, the success rate for treating late stage (wet) AMD has dramatically improved the outcomes for elderly

patients suffering from this dread disease.

Lucentis, a potent anti-VEGF agent introduced by **Genentech** (South San Francisco), has had an enormous impact on the treatment of AMD. Its clinical trials have demonstrated that Lucentis can not only halt the progression of AMD but that in a significant number of patients it has been shown to actually reverse its progression and substantially improve visual acuity.

Price (no surprise) the decider

Despite its stellar results, Lucentis has its shortcomings. Specifically at \$2,000 per dose, it is extremely expensive. The regimen for many patients may mean treatments for several years.

The enormous cost of Lucentis has spurred the off-label use of another Genentech FDA-approved compound Avastin, which is a very similar molecule to Lucentis and widely used as an anti-cancer drug. The average cost for Avastin to treat AMD is about \$50 per dose, a paltry 2.5% of the cost of Lucentis.

In October 2006 the **National Eye Institute**

	2006	2007	Increase
Conventional	\$1,334	\$1398	4.8%
Premium	\$166	\$212	27.7%
Total	\$1,500	\$1,610	7.3%

Source: Ophthalmic Market Perspectives, published by MarketScope, Jan 9, 2008

(NEI) of the National Institutes of Health, in response to a huge controversy surrounding the relative safety and efficacy of Lucentis and Avastin and the huge disparity in their cost, announced that they would be launching a clinical trial comparing the outcomes of Lucentis and Avastin. Patient enrollment for the Comparison of Age-Related Macular Degeneration Treatments Trials (CATT) began before the end of 2007.

The NEI study plans to enroll 1,200 patients with newly-diagnosed wet AMD at 47 centers in the U.S. and will follow patients for two years. It is expected to take about four years to complete, with the first data, at one year follow-up, expected to be released in late-'09.

During one of the sessions here in Hawaii, retinal physicians were polled on their use of Lucentis vs. Avastin for wet AMD. Not surprisingly, the doctors said that they used Avastin 69% of the time and Lucentis only 25%. The other 6% was accounted for by either Visudyne or Macugen.

This outcome is consistent with the feeling in the retinal community that the drugs are essentially the same and that the deciding factor for selection is price. Clearly, the CATT data will be very welcome information.

Despite the dramatic improvement in AMD drugs, the search for better treatment modalities continues. One approach, which was first introduced at last year's Hawaiian Eye Meeting was presented again, with updated clinical data.

An AMD device strategy

Michael Ip, MD, associate professor of ophthalmology at the **University of Wisconsin** (Madison) and an active clinical investigator, discussed a novel device-based approach to AMD. Developed by **NeoVista Inc.** (Fremont, California), the Epi-Rad90 Ophthalmic System features the use of an ionizing radiation source that delivers strontium-90 directly to the macula, or central zone in the retina.

At the outset of his talk, Ip noted the very impressive results of Lucentis and asked, "Why do we need to revisit radiation as a potential treatment for age-related macular degeneration?"

His answer, that radiation therapy has strong anti-angiogenic, anti-inflammatory and anti-fibrotic effects and can work synergistically with oncolytic compounds.

For example, it is very beneficial in combination with Avastin for colorectal cancers. In addition, he indicated that the safety of strontium-90, particularly at relatively low doses, has been well-demonstrated.

He also pointed out that past results of using radi-

ation therapy to treat AMD has been mixed. "Some studies have been positive, while some studies have been negative."

The goal of this therapeutic approach is to permanently disable the proliferating new cells — the ultimate culprits in causing central vision loss — by damaging their DNA structure.

The procedure delivers strontium-90 at a controlled penetration depth of about 3 mm, irradiating the area where new vessels — known as neo-vascularization — is occurring. It is minimally invasive and is performed under local anesthesia during a partial

vitrectomy, a common surgical procedure for retinal specialists, and takes about 30-45 minutes in total treatment time.

The latest Epi-Rad clinical results, with 24 month follow-up data, were presented here by Ip.

In the study of 18 patients, 89% of patients lost fewer than 15 letters, 50% gained more than zero letters and 17% gained 15 or more letters.

He also showed there was no evidence of radiation toxicity at two years.

He called this data "compelling" in both safety and efficacy measures and noted that it compared very favorably to the stellar results seen in two key Lucentis pivotal trials — ANCHOR and MARINA.

After reviewing one-year results of a study previously reported at the November 2007 AAO meeting that used this radiation therapy concomitantly with Avastin, Ip said that "by permanently disabling the proliferating CNV cells, we may be able to reduce the number of anti-VEGF treatments that we do."

Indeed, one of the key findings from this study was that 85% of the patients did not require additional injections after their initial injections.

As shown in **Table 4**, presented by Ip, there appears to be several potential advantages of the NeoVista device. Perhaps the most critical attribute of this therapy is that it appears to boost the durability of VEGF compounds, thus potentially reducing the need for these costly and inconvenient monthly injections.

Following Dr. Ip's talk, the moderator for this session, noted retinal surgeon Elias Reichel, MD, from **Tufts New England Medical Center** (Boston), said that "there clearly does seem to be an opportunity here where we can reduce the number of treatments."

Needed: cost reduction

A poll conducted at this meeting, aimed at assessing the need for ongoing Lucentis injections showed that the average patient requires about 4.5

Not surprisingly, the doctors said that they used Avastin 69% of the time and Lucentis only 25%. The other 6% was accounted for by either Visudyne or Macugen.

Table 4
Potential Advantages of Radiation vs. Lucentis

Outcomes	Potential for vision to be equal to or better than Lucentis alone
Patient Convenience	Easier treatment regimen, requiring fewer office visits
Patient Economics	Lower co-payments and out of pocket expenses
Practice Economics	Decreased burden on physicians' time
Lower Total Costs	Could significantly lower overall costs to CMS and payors

Source: Michael Ip, MD, presented at the Hawaiian Eye 2008 Meeting

injections per year. While it is far too early to tell how much Epi-Rad will reduce the frequency of injections, it does appear likely that it will have a positive impact in this area.

Each monthly Lucentis injection costs the health-care system about \$2,200 (drug cost plus the physician injection fee). Including a monthly patient out-of-pocket, co-pay cost of \$440, the annual cost is about \$26,000 per patient, with the out-of-pocket annual cost of about \$5,000.

A less obvious but important benefit of reduced injections is that it eliminates the risk of endophthalmitis. This dreaded complication of all intraocular surgeries, although extremely rare, can result in the possible loss of vision.


In another talk, Ip reported that endophthalmitis

rates in key AMD trials such as VISION, ANCHOR and MARINA were 0.1%, less than 0.1% and 0.05% respectively.

NeoVista is in the midst of its pivotal clinical trial, dubbed the CNV Secondary to AMD Treated with Beta Radiation Epiretinal Therapy (CABERNET) trial

and hopes to complete it by 3Q08. The trial is being conducted at roughly 30 sites worldwide (20 in the U.S.) and is randomizing patients to either strontium-90 plus Lucentis or to just Lucentis. A total of 450 patients will enter the trial, 300 on the NeoVista arm and 150 in the Lucentis arm.

If that schedule is met, NeoVista hopes to submit its PMA in the third quarter 2009 and begin U.S. commercialization about one year later. It also hopes to win the CE mark sometime this quarter.

NeoVista, founded in 2002 by **The Innovation Factory** (Duluth, Georgia), has been funded by a prestigious group of venture capital firms since its inception. It is now well-funded to complete its pivotal trial and begin commercialization. 

Advances in Cardiovascular Technology: State of the Industry and Emerging Markets, Vol. 4

The publishers of *Biomedical Business & Technology* and *Cardiovascular Device Update* have released *Advances in Cardiovascular Technology, Vol. 4* — a new 2007 report on the developments, trends and outlook of the cardiovascular technology markets.

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To scan — or not to scan?

Imaging companies respond to radiation-caused cancers with new, lower-dose CT technologies

By AMANDA PEDERSEN
BB&T Staff Writer

The value of computed tomography (CT) scanning to diagnose illness or injury is difficult to dispute. Just as difficult to dispute are the risks associated with this technology. CT scans expose patients to higher doses of radiation compared to plain-film X-ray, and CT scanning has been associated with producing cancer, later downstream, in a small percentage of those scanned. Thus, imaging companies continue to introduce new technology that reduces patients' radiation exposure.

The most recent charge concerning the instances of cancer as the result of CT scanning radiation came in December, with research published in the *New England Journal of Medicine* that once again sparked the debate between researchers and experts from the imaging community over the benefits of CT vs. the associated cancer risks, and actual cancers, experienced downstream.

According to two researchers from the **Center for Radiological Research at Columbia University Medical Center** (New York), an estimated 62 million CT scans are given each year in the U.S. compared to 3 million in 1980. And for children, an estimated 4 million to 5 million CT scans are ordered each year. As a result of this marked increase in CT use, David Brenner, PhD, and Eric Hall, PhD, predict that in the coming decades as many as 2% of all cancers in the U.S. may be caused by radiation from CT scans being performed today. Children face the most danger, they say.

Brenner told *Biomedical Business and Technology* that this study is a continuation of his previous research, published in 2004 in the journal *Radiology*, that study resulting in issuing a warning concerning the link between CT scans and cancer. Brenner's 2004 study estimated that a 45-year-old who gets one full-body CT scan would have a lifetime cancer death risk of about 0.08%, thus producing a cancer-related death in 1 in 1,200 people. But another 45-year-old who has annual full-body CT scans for 30 years would accrue a lifetime cancer mortality risk of about 1.9%, or about a 1-in-50 chance of dying of cancer, according to Brenner's findings in the earlier study.

A U.S. Government study, to be published this year, determined that the per-capita radiation dose from clinical imaging exams has risen by 600% between 1980 and 2006, with a major contributor being CT exams, those numbers increasing over 20

times during this period.

And the numbers have risen rapidly especially in the past three years, Brenner told *BB&T*. "The numbers of CT scans in this country have gone up as our understanding about the carcinogenic potential of radiation doses has improved," Brenner said. In other words — the risks are better understood now, with renewed debate especially centering on scanning children and doing an increased amount of unnecessary scanning.

Lowering the dose

In response, the industry is bannering its efforts to develop new systems intended to expose patients to lower doses of CT radiation.

Imaging3 (Burbank, California), for example, said its newest product, the Dominion Volumetric Imaging Scanner, uses radiation doses between 100 to 1,000 times less than a standard CT scan. Yet, according to the company, the image is more accurate than standard CT scanners because the reading is three dimensional and constructed in real time. The Dominion production prototype, introduced in November at the **Radiological Society of North America's** (RSNA; Oakbrook, Illinois) annual meeting in Chicago, is not yet FDA approved.

The system uses photo-fluoroscopy technology, one of the imaging industry's responses to the growing concern about the amount of radiation exposure from CT, Dean Janes, CEO and chairman of Imaging3, told *BB&T*.

The Dominion uses an X-ray source and a flat panel CCD detector, which are perpendicular to each other. They scan at 360-degrees every two-10ths of a second to eight-10ths of a second. Using high-speed photo-fluoroscopy, images are taken throughout this scan in several angles inside an O-shaped device that works similar to a "C" arm. These images are then instantaneously placed into a 3D construct and updated every two-10ths of a second to eight-10ths of a second thereafter. The scanner is mobile, Janes said, and can be used throughout a hospital for CT diagnosis or guidance during a minimally invasive procedure.

Because imagery is so important in the medical field for guidance and diagnosis, Janes said he thinks a lot of radiologists simply don't want to know about the radiation dosage. Radiation dosages are a trade-off, he said, for the valuable diagnostic information

provided by a CT image.

Still, he said the industry is beginning to look at imaging from the perspective of the total accumulation of radiation, the amount of exposure a patient gets as a result of undergoing several imaging procedures.

Referring to devices such as the Dominion, he termed these "the new 'green' technology" – lower dosages but still producing highly accurate 3D images.

"That's where the future is going to be," Janes said. "The higher-power CT will still exist, but I think it will decline in usage — it has to."

Last July another company, **biospace med** (Paris, France/Marietta, Georgia), reported filing a 510(k) application with the FDA seeking clearance to market its EOS ultra-low-dose 2D/3D orthopedic X-ray imager. The filing came on the heels of the company's obtaining the CE mark for the system, as well as approval by the Health Canada Medical Device Bureau.

The EOS ultra-low dose 2D/3D is based upon a particle detector technology for which French physicist Georges Charpak received the Nobel Prize in Physics in 1992, biospace med said. This detector, which is designed to allow images to be obtained with a lower dose of radiation, is part of a system that is capable of very long-length digital imaging, permitting full-body, uninterrupted digital imaging with a single scan, according to the company.

With EOS, the patient stands in the imager and a vertical drive mechanism moves a "C" arm down the height of the patient, or any desired length. The "C" arm contains two separate imaging systems capable of simultaneously capturing both a frontal and side image.

The highly sensitive X-ray detector enables low-dose image capture, creating a "head to toe" image within roughly 20 seconds for an adult and about half as long for shorter pediatric patients. The fully digital system produces a front and side view of the patient, instantly available for viewing.

Unlike standard X-rays, there is no film, no need to adjust for distortion and no need to digitally stitch together multiple images, the company said.

EOS technology "offers a less expensive image at a much lower radiation dose, with new information being provided," Richard diMonda, the company's VP of strategic marketing, global, told *BB&T*.

The lower-dose of radiation is particularly important, diMonda said, among pediatric patients with spine deformities, such as scoliosis, who have to be imaged a few times a year.

Reducing scanning time

Toshiba America Medical Systems (TAMS; Tustin, California) also is paying attention to these

concerns with its AquilionONE diagnostic imaging system. Unveiled during the RSNA meeting, TAMS says the system has the potential "to revolutionize" patient care by greatly reducing the time to diagnose life-threatening diseases such as heart disease and stroke, from days and hours to what company VP of marketing, John Zimmer, termed "mere minutes."

Zimmer told *BB&T* that with the AquilionONE, physicians can see not only a 3D depiction of an organ, but also the organ's dynamic blood flow and function. Unlike any other CT system, it can scan one organ — including the heart, brain and others — in just one rotation because it covers up to 16 cm of anatomy using 320 ultra-high resolution 0.5 mm detector elements. This reduces exam time, as well as radiation and contrast dose, dramatically increasing diagnostic confidence, Zimmer said.

A single organ or area of the body can be captured in one rotation, at one moment in time, eliminating the need to reconstruct slices from multiple points in time. Commercial release of the AquilionONE is expected this summer.

In October the **Cleveland Clinic** placed dual-source CT at No. 10 on its "Top Ten" medical innovations of 2008 list, noting that such scanners use two radiation sources and detectors, speeding medical imaging and exposing patients to less radiation.

Too many unnecessary scans

While CT scans save lives, researchers Brenner and Hall acknowledge, doctors often view CT scans as similar to other non-radiation imaging modalities — such as ultrasound or MRI. Thus, children are often scanned via CT technology for appendicitis, even though ultrasound is a perfectly good alternative for that, Brenner said. He also noted that MRI is a good alternative for diagnosing liver disease. And in the emergency room — where admittedly there is tremendous pressure to move patients through to treatment quickly, Brenner said that CT scans are ordered before a physician has done a thorough examination.

Children are at a greater risk, he said, because their developing bodies are more sensitive to the effects of radiation, and also because of the time between first scans and the overall life span in which cancer can develop. By contrast, someone exposed to radiation late in life is much less likely to ever be diagnosed with radiation-induced cancer, and much more likely to die of other causes.

Not unexpectedly, several radiological organizations responded to the new study with concern that it may cause patients to avoid getting life-saving medical imaging care.

Andrew Whitman, VP of the **Medical Imaging & Technology Alliance** (MITA; Washington), told *BB&T* that the industry is "well aware and sensitive to the fact that radiation is an issue."

Bit he focused more on the benefits of this type of diagnostic scanning.

No more 'exploratory' surgery

"CT scans have allowed us to see things and detect diseases that we had not been able to do even five years ago," Whitman said. "One of the reasons you don't hear the term 'exploratory surgery' anymore is because of medical imaging and that is due in part to CT scans."

Arl Van Moore, MD, chairman of the board of chancellors of the **American College of Radiology** (ACR; Reston, Virginia), echoed this view.

"Thirty years ago, instead of having a CT scan, you might have had abdominal surgery just to take a look-see — without any guarantee that they would find anything," Moore told *BB&T*.

And while the ACR also acknowledges the problem of radiation, Moore said the organization especially is concerned that the comparisons the study makes between radiation exposure from CT and the exposure from the atomic bomb.

The recent *JAMA* studies and others use the radiation exposure and effects experienced by many survivors of the Atomic bomb attack on Hiroshima as the standard for measuring the effects of CT radiation. "These are really apples and oranges [comparisons]," Moore said.

Most CT exams, he said, are performed in a controlled setting, he said, which results in limited radiation exposure to a small portion of the body. In contrast, Atomic bomb survivors experienced instantaneous radiation exposure to the whole body. Also, CT exams expose patients solely to X-rays, whereas Atomic blast survivors were exposed to X-rays, particulate radiations, neutrons and other radioactive materials. The known biological effects are very dif-


ferent for these two scenarios, he and others have argued,

"Patients need accurate information on which to base their healthcare decisions," Moore said. "They may be terribly confused and unduly distressed by some of the statements in this study."

One point the researchers and radiological organizations agree on is that patients should keep a record of their X-ray history and, before undergoing a scan, should question their doctors as to the medical benefit gained from the scans and the alternatives that can be used.

Brenner also pointed out one possible way to reduce repeat CT scans from being performed on the same patient for the same problem as that patient gets moved from one hospital to another. That method would be to give patients a DVD of the CT scan to carry with them as they move through the healthcare system, avoid the need to undergo multiple scans for the same thing. This would be a "big plus" and would reduce unnecessary scans, he said, while acknowledging that many hospitals are not yet able to do this.

In another effort to reduce unnecessary scans, the **Committee on Medical Aspects of Radiation in the Environment** (COMARE; Didcot, UK), an organization that advises the UK government, warns against offering CT scanning on healthy individuals, a practice known as commercial CT scanning of asymptomatic people.

In a report released in December, COMARE recommends that people who display symptoms and, on their own, seek a commercial CT scan should be referred to their doctors before being scanned. Such services also should stop offering whole-body CT scans for people without symptoms, COMARE said. The committee also says commercial CT scans should not be used to assess spinal conditions body fat, and osteoporosis in healthy people. — 

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FDA 3rd-party device audit program seen stuck in first gear

By MARK McCARTY
BB&T Washington Editor

A Jan. 29 report on FDA device inspections from the Government Accountability Office (GAO) has disclosed that the FDA is having a difficult time keeping up with inspections, continuing to turn up the heat on an agency with too many tasks and too few resources.

The GAO report, signed by Marcia Crosse, director of healthcare for GAO, was delivered to the Oversight and Investigations Committee of the House Energy and Commerce Committee, and Crosse's testimony indicated that GAO is not optimistic about the third-party inspection initiatives now underway.

The report says that the agency typically inspects domestic Class III device makers only every three years, rather than every two years as required, and U.S. makers of Class II devices only every five years rather than every three years.

Foreign makers of Class II devices had seen an FDA investigator only every 27 years, on average, the report says, and overseas companies making Class III devices saw an FDA investigator only every six years.

GAO said that the third-party inspection program has been of limited value, with "the small number of inspections completed [raising] questions about the practicality and cost-effectiveness" of adding more third-party capacity.

GAO has addressed the third-party inspection program in previous reports to Congress. FDA was statutorily limited to contracting with 15 organizations to conduct inspections under the Accredited Persons Inspection Program (APIP). But while the limit was then raised, most of the companies that applied never got around to obtaining full certification from FDA to conduct the inspections.

The current GAO report notes that as of Jan. 11, FDA had accredited 16 such organizations. But of greater importance was the fact that "individuals from eight of these organizations had completed FDA's training and had been cleared to conduct inspections."

FDA and these inspectors had conducted 44 total joint training inspections, but "fewer manufacturers volunteered to host training inspections than have been needed."

The report also says that FDA's short scheduling for inspections have left third-party companies out "because they had prior commitments."

The FDA Amendments Act of 2007, the report

says, eliminated the requirement that FDA periodically inspect foreign device manufacturing plants, which may provide some relief to FDA's inspection work plan.

FDA signed a cooperative agreement with **Health Canada** in 2006 for joint inspections of device makers by the two countries that would satisfy the requirements of both, but GAO expressed skepticism that the Pilot Multi-Purpose Audit Program (PMAP) audit agreement would make much difference, because it replicates the broader APIP program, designed in part to help firms cover the inspectional requirements of non-U.S. regulatory bodies.

The sheer volume of device manufacturing facilities that FDA is tasked with inspecting is impressive.

According to GAO, "more than 23,600 establishments that manufacture medical devices were registered as of September 2007," with about half of them making Class II or Class III devices. The U.S. is home to roughly 5,600 of these; China accounts for another 675 and Germany 581.


Language barriers are a problem for FDA investigators. According to GAO, FDA has not been in a position to provide translators, relying instead on "an English-speaking representative of the foreign establishment being inspected, rather than an independent translator."

FDA has relied largely on volunteers to handle the overseas inspections, but the agency indicated "it is difficult to recruit investigators to voluntarily travel to certain countries." FDA field investigators must have three years of experience examining domestic plants before they can inspect overseas, a large limiting factor to the number available.

FDA also has not placed a particularly high priority on pre-approval inspections. GAO said that "relatively few" premarket inspections take place, in part because devices cleared under the 510(k) path do not trigger premarket inspections.

FDA's information technology base also drew criticism from the GAO. Its legacy system for tracking device manufacturing plants, the Device Registration and Listing System, has a list of roughly 10,600 domestic and foreign plants, but it includes plants that are either not making medical devices at all or are not shipping the devices to the U.S.

The Operational and Administrative System for Import Support (OASIS) is "not intended to provide a count of establishments, but lists the source of imported devices. Apparently the U.S. Customs Service is responsible for some of the information in OASIS, and "inaccurate data entry by customs brokers at the border" produces duplication.

As a result, FDA employees must make comparisons between these two databases manually because "the databases cannot exchange information . . . electronically." 

Novo-Nordisk 2nd to abandon effort for inhaled insulin

By DON LONG
BB&T Executive Editor

Inhaled insulin, the alternative to needle injection of insulin – very likely to be the next big drug/device combination since the approval of drug-eluting stents.

Inhaled insulin – likely to be the next blockbuster, given the size of the population of those with diabetes looking for faster, easier methods for controlling their metabolism.

Inhaled insulin – a lock for big profits.

Apparently not, for all of the above.

Last month, **Novo-Nordisk** (Bagsvaerd, Denmark) became the second company in the past four months to give up on the effort, saying that it was dropping development of its inhaled insulin product, saying that the prospects for profitability were too low to continue the effort. The dropped would also cost hundreds of employees their job at the company's Hayward, California, site.

The company's product in development was branded AERx IDMS, and the product was to be delivered by an electronic pulmonary system for fast administration. That system was in development by **Aradigm** (Hayward), and Novo-Nordisk's move was a jolt to that company's prospects.

Novo-Nordisk had been considering for the past weeks the move by a big player in this effort, **Pfizer** (New York), which had won approval for and commercialized its inhaled insulin, Exubera, and its decision to walk away from further efforts to sell the product, given the large failure of what had been great expectations.

Pfizer had assumed it would immediately take over a good-sized chunk of the insulin market but had seen it develop only a miniscule 1% of that sector – small potatoes and little prospects for future profits, given the time and work in its development effort.

Pfizer's move likewise damaged what had been hopeful prospects for its partner in the device development side of the research, **Nektar** (San Carlos, California), a unit of **West Pharmaceuticals** (Lionville, Pennsylvania). Nektar's big hope, of course, had been the vision of snagging 10% of royalties on a billion-dollar product.

But Nektar's side of the effort was cited as one reason for Pfizer's move. Nektar's delivery inhaler looked somewhat like a taller, thinner tennis ball can – and not, or thought not, user-friendly.

Nektar issued bristly statements about Pfizer's decision, but its feathers were smoothed by a \$143

million to Pfizer to close out any contractual agreements concerning Exubera, and Nektar indicated that it might continue development of the product on its own.

Mads Krogsgaard Thomsen, chief science officer at Novo-Nordisk, during a conference call on the move, said the decision to discontinue further development of AERx IDMS was based on an analysis of "a vast amount of information" which included recent market research involving patients' and physicians' experience with Exubera. He said that Novo-Nordisk concluded "that a breakthrough in inhaled insulin takes more than AERx can offer."

Krogsgaard Thomsen emphasized that the company's decision was not due to safety concerns and, specifically, that Phase III testing had revealed no safety problems.

After a thorough review of the medical rationale for inhaled insulin and the competitiveness of the AERx IDMS system compared with insulin injection devices, such as Novo Nordisk's Flexpen, he said that the firm concluded that "fast-acting inhaled insulin in the form it is known today is unlikely to offer significant clinical or convenience benefits over injections of modern insulin with pen devices."

Most patients with Type II diabetes who start insulin therapy use long-acting insulin products, he noted. "Experience shows that they want very simple, very convenient devices for administering their insulin," Krogsgaard Thomsen said.


Novo-Nordisk, he said, decided to focus its research on inhalation systems for long-acting formulations of insulin and analogue insulins, such as those based on glucagon-like peptide-1 (GLP-1).

While the firm will keep about 50 scientists employed at its Hayward site to work on the GLP-1 and long-acting inhalational insulin programs, the company is laying off about 300 employees at that location, he said.

AERx IDMS, the electronic delivery system for administering the insulin by inhalation, was being tested in nine Phase III clinical trials involving more than 3,000 patients, said Igor Gonda, CEO of Aradigm. The company said that the patients in those studies will be switched to other insulin therapies recommended by their physicians.

The crux of the argument currently for fast-acting inhalational products, Gonda said in an interview, lies in a patient's willingness to convert from an injection product to an inhalational product.

Gonda said it currently is unclear what role his firm would play in Novo Nordisk's new development program.

Aradigm, he said, must first consider what is best for its investors and long-term plans for its development pipeline before entering into any negotiations with Novo-Nordisk. 

International report

Software bugs delay new proton center start-up in Munich

By JOHN BROSKY
BB&T European Editor
and BB&T Staff Reports

Varian Medical Systems (Palo Alto, California) is struggling to commission Europe's first full-service proton therapy center in Munich, Germany, and cannot predict when the doors will be opened to patients.

The setback with the **Rinecker Proton Therapy Center** (RPTC) poses a significant challenge to the boast by Varian CEO Tim Guertin that the company was on its way to building a "several-hundred million dollar proton therapy business."

Varian built momentum last year toward that promise by adding a proton therapy capability with the January 2007 acquisition of **Accel Instruments** (Bergisch Gladbach, Germany), a private supplier of proton therapy systems for cancer treatment.

Proton therapy is considered the most advanced form of radiation treatment, using a particle accelerator to generate a beam of protons that can be targeted in three dimensions and more precisely deliver a high dosage of radiation to a tumor while sparing, or reducing, the damage to surrounding healthy tissue and organs.

In March 2007, Varian reported the commissioning of Accel's super-conducting cyclotron at the **Paul Scherrer Institute** (PSI; Villigen, Switzerland), calling it the world's first commercial cyclotron for routine medical use.

Varian's takeover of Accel was roundly welcomed, from Munich to Albuquerque, New Mexico, where at the Particle Accelerator Conference in June 2007, scientists said the combination of Accel's proton therapy technology and expertise with Varian's expertise in image-guided radiation therapy, treatment planning, information systems, clinical workflow, manufacturing, service and distribution would give the world a fully integrated proton treatment system from a single company.

By December, Varian said the FDA had cleared its proton scanning algorithms that the company claims will give clinicians greater control over how proton beams are used to target tumors and other abnormal-

ities. What did not happen for Varian in 2007 was meeting the deadline imposed by its commissioning contract with the RPTC to open the first gantry and treatment room for patients on June 22.

By October, the supervisory board of the freshly completed €150 million (\$220 million) facility went public with its frustrations, explaining to patients who are awaiting treatment that while the hardware is ready, the delay is caused by "Varian's obvious difficulties to debug the Accel therapy control software modules."

Dr. Markus Rinecker of the supervisory board of **ProHealth** (Munich), which operates the Rinecker center, told *BB&T*, "We have a long list of patients waiting for treatment. Some of them have literally died waiting for treatment because proton therapy was their last chance."

Rinecker, the son of company founder Dr. Hans Rinecker, said, "We have seen massive delays. We do not understand what is causing all the delays. What we see is the hardware is working. Yet there are apparently a lot of issues with the software, with quality assurance and with the CE certification."

He added: "We hear from Varian about specific technical areas, but I cannot tell you what is really keeping them from opening this center. We are not getting the big picture. Are they not capable? Are they confused by the merger with Accel? They do not give us any clues. Technically we should be there."

"I can only give you one side of this story," he told *BB&T*, adding, "I will be very eager to hear what you are able to learn from Varian."

Lester Boeh, VP of emerging businesses at Varian, told *BB&T* through a spokesman that the technology installed in Munich is by far the most advanced in the industry and "the commissioning work is continuing." He said, "We've made good progress on the hardware and are working on completing the software that controls the treatment delivery. We have technical beam operating on all of the treatment gantries."

Boeh added: "There is much work to do, but we are confident we will be successful. We look forward to the day when the system is ready for patient treatment."

The new RPTC houses what is easily one of the largest medical devices in the world, at its heart a super conducting cyclotron built along the Isar River south of Munich. The beams are piped into Europe's first purpose-built center for proton radiation therapy to provide a complete hospital setting for the treatment of cancer tumors.

With four gantries to deliver beams in separate treatment rooms and a fifth treatment room featuring a fixed beam, the RPTC boasts a throughput capacity of 4,000 patients per year. That compares with what Rinecker estimated is 50 patients per year at the PSI in

Switzerland.

Where European medical device makers wait for years to receive reimbursement approval for innovative therapies from state health insurance funds, the RPTC is in the enviable position of already having an approval for proton therapy.

"Proton therapy is recognized for the contract covering about 45% of Germans," said Rinecker.

"We are most eager to begin treatment for the patients who really can benefit from proton therapy, which is children. Children suffer the greatest effects from radiation therapy simply because they live longer and are still growing. Treating a tumor in the spine for a child is a very big help because it means fewer deformations as the spine develops, for example."

Rinecker added: "We could open the doors tomorrow."

Report says med-tech was 2007 'jobs engine' in Germany

Specialization in high-tech medical technologies paid off handsomely for Germany in 2007, with the sector reporting strong job growth and steady innovation, as defined by the number of new products to be introduced in 2008.

The annual report from Berlin-based **BVMed** (German Medical Technology Association) shows 55% of the 140 med-tech companies taking part in the survey created new jobs in 2007, compared with growth of 45% for 2006 and 36% in 2005. The medical technology sector employs some 165,000 people in Germany.

The sector is a "jobs engine" for Germany, according to Joachim Schmitt, director of the association.

The report shows an average of 9% of annual sales revenue is invested in R&D with a third of the responding firms saying they invest far more. Eighty percent of the companies said they would bring new products to market in the coming year.

The mood in the sector is mixed, with less than half of the companies predicting improved results for 2007 over 2006. On average companies expect a 7% rise in sales.

Holding back enthusiasm is the uncertainty about reimbursement for new procedures, increased pressure on prices coming from purchasing syndicates, and hospital lump-sum-per-case payment policies.

The view that medical technology is seen as a cost driver by many health insurers, hospitals and doctors is challenged in a second report conducted by the **Technical University of Berlin** and corporate consultants **Droege & Co.** on behalf of the German elec-

trical engineering and electronics industry association.

Titled "The Savings Potential of Innovative Medical Technology in Healthcare," the study examines the impact on work processes and cost structures for 10 medical technology products, including an implant for joint closure and a procedure for removing cancer cells.

Annual savings ranged from €5 million (\$7.5 million) to €990 million (\$1.47 billion) and the total for all 10 products was put at €1.5 billion (\$2.25 billion) per year.

A rapidly growing area among German companies is home care and BVMed is pressing for the greater acceptance and official recognition for home care as a subcategory under German social health laws. The association says the care being delivered and the med-tech products used to deliver that care are inseparable, representing "a cohesive and unique part of healthcare."

Examples of home care tightly linked to products include dialysis, advanced wound care, pain and infusion therapy, and respiratory services.

The association is promoting a public policy statement of "ambulatory where possible, in-patient where necessary" to push official recognition and reimbursement.

German spending on medical devices and technologies amount to almost €20 billion (\$29 billion) annually, making it the third-largest market for medical technologies in the world, according to BVMed, and the largest in Europe, with twice the volume of France and three times that of England.

1st pan-Asian Colorectal Cancer Congress being planned

Radiology experts from China, Korea, Japan and the UK convened as a steering committee group in London recently to draw up plans for the first pan-Asia CTC Congress. Congresses and workshops specializing in CTC already take place annually in Europe and North America. The organizers of the Asian meeting said the rising prevalence of colorectal cancer in Asia necessitates a meeting in that region to ensure the exchange of scientific and professional information about colorectal cancer screening and to encourage increased adoption of CTC by Asian radiologists.

The organizers said the Asia-Pacific region contributes almost half of the world's cancer deaths. Colorectal cancer is the world's second most prevalent cancer and is the cause of roughly 75,000 deaths annually in Eastern Asia (China, Japan, Korea, Mongolia)

and the figure is rising.

Among individuals diagnosed with colorectal cancer, survival is highly dependent on how advanced the disease is at diagnosis. Five-year survival is 90% if the disease is diagnosed while confined by the bowel wall but only 65% once it has spread to the lymph nodes and 9% if it has spread throughout the body.

Most colorectal cancers arise from precursor lesions in the large intestine called "adenomatous polyps." Screening is important because it means that adenomatous polyps can be removed before they become cancerous. Screening also detects asymptomatic cancer, which has a better prognosis than symptomatic disease.

There are a number of CTC screening tools available, each with advantages and disadvantages.

Colonoscopy is considered the gold standard for screening for colon cancer; however, data presented at last year's **American College of Radiology Imaging Network** meeting showed that CTC is at least as sensitive as conventional colonoscopy in detecting adenomas of 1 cm diameter or larger. CTC is a less invasive option and unlike conventional colonoscopy, there is no need for the patient to undergo sedation and the risk of symptomatic colon perforation is much less.

In addition to offering "hands on" training workshops, the congress will encourage research collaboration among delegates and help to foster and cement relationships within the Asian radiology and gastroenterology community.

Medicsight (London), a developer of computer-aided detection and image analysis software for the medical imaging market, will provide an educational grant to facilitate logistical support for the inaugural meeting.

Rapid growth predicted for knee market in China

According to a report by the **Millennium Research Group** (Waltham, Massachusetts), sales of reconstructive knee implants will skyrocket in China, at an almost 25% compound annual growth rate from 2007 through 2012.

Strong economic growth, favorable demographics and an improving quality of life, particularly in the country's urban areas, will drive this market throughout the next five years, according to the report, "Chinese Markets for Large-Joint Reconstructive Implants 2008."

Millennium said the Chinese reconstructive knee

implant market, currently pegged at nearly \$100 million, will almost triple to reach just under \$300 million by 2012.

"Because China's strong economic growth has spurred the rise of a middle class, many now have the financial resources to improve their quality of life," the company said. "Some of the country's aging and osteoporotic citizens are doing so by spending on elective knee implant surgery. In order to accommodate this increasing demand, more surgeons are training to perform knee implant procedures."

The Millennium group's Global Markets for Large-Joint Reconstructive Implants report series covers India, the U.S., Japan, and Europe.

Three-phase accord for China is signed by Organogenesis

Organogenesis (Canton, Massachusetts) said last month that it has signed a memorandum of understanding with China's **National Tissue Engineering Center** (NTEC; Shanghai), a stem cell and regenerative medicine consortium. Organogenesis formed the three-phase agreement with NTEC in early December while visiting China as a delegate of Massachusetts Gov. Deval Patrick's trade mission to that country.

The NTEC is a central government-funded private company. Its founder, Professor Yiling Cao, is a well-known plastic surgeon trained at Harvard and the **Massachusetts Institute of Technology** (Boston) where, coincidentally, Organogenesis was originally founded. The NTEC comprises more than 70 scientists and growing teams of regulatory, production and commercial professionals and has recently completed the development of a new facility in a **Shanghai Technology Park** with manufacturing, R&D laboratories and business offices.

The first phase of the partnership will begin immediately and will include the commercialization and exporting of existing Organogenesis technology – including its signature product, Apligraf – in the Chinese market, and eventually throughout Asia.

The field of use in the memorandum of understanding covers wound healing and scars, but performance milestones may expand the scope of the agreement to include broader surgical uses.

Organogenesis said Phases II and III would follow, triggered by milestones achieved between the two companies. Phase II will include manufacturing existing Organogenesis cell therapies via a manufacturing site in Shanghai, necessary due to the short shelf life of living cell technology, including Apligraf.

Phase III will include the co-development of new

technologies, which may be custom-designed for Chinese market needs.

French certification lab eyes orthopedics in U.S.

The **Laboratoire National d'Essais** (LNE; Trappes-Elancourt, France) reported that it has expanded its footprint for international certification of medical devices by sharpening its focus on orthopedic devices in the American market and winning recognition as a certification body (CB) for electro-medical devices in 49 countries. LNE set up an office for its division that focuses on medical device certification, called **G-MED**, in 2005 in Silver Springs, Maryland, close to the sprawling offices of FDA.

Last November LNE/G-MED was chosen by **NuVasive** (San Diego) for third-party certification of its new line of MaXcess minimally invasive specialized spinal implants that is currently undergoing clinical investigation.

Demonstrating conformity through a single CB testing procedure will assure NuVasive certification for MaXcess in the countries currently participate in the CB program. This international harmonization includes FDA approval through the 2002 Medical Device Modernization Act authorizing the Inspection by Accredited Persons (IAP) program, a CE mark for European markets, as well as approval for global markets that include China, India, Japan, Australia, Korea, Russia, Brazil, Canada and Argentina.

Many countries not formally participating in the CB program nonetheless use the certification planning and audit process as the basis for their national certification procedures.

PLC wins approval for RenalGuard, plans launch

PLC Systems (Franklin, Massachusetts) reported receiving the CE mark for its RenalGuard System, clearing the way for the company to begin initial launch of the product in the European Union.

CE marks

RenalGuard is an automated, real-time, matched-fluid replacement device intended for interventional cardiology and radiology patients undergoing imaging procedures using contrast media.

It is based on existing pre-clinical study data that suggests that initiating and maintaining high urine output during imaging procedures allows the body to rapidly eliminate toxins in contrast media, reducing their harmful effects.

• **HyperBranch Medical Technology** (Durham, North Carolina) said it received the CE mark for its OcuSeal product, providing regulatory approval for sales in Europe and "potentially," it said, in all other countries outside the U.S.

HyperBranch describes OcuSeal liquid ocular bandages as providing a protective barrier while stabilizing ocular wounds following surgical or non-surgical trauma and other ocular conditions.

OcuSeal is intended for direct application on corneal, conjunctiva, and sclera surfaces to provide a temporary protective barrier in post-surgical, post-traumatic, and non-traumatic ocular conditions.

The single-use device is terminally sterilized and allows for a one-handed brush application, according to the company.


The product is synthetic hydrogel which polymerizes in a moist field, flows optimally depending on the application, and is bio-degradable as the tissue re-establishes itself. The biocompatible composition is stored at room temperature and is delivered through the custom applicator to meet the specific needs of the procedure. The intended users of OcuSeal are ophthalmologists in a surgical or clinical environment.

• **Tryton Medical** (Newton, Massachusetts), a developer of stents designed for the treatment of bifurcation lesions received the CE mark approval for its Side Branch Stent. The Tryton Side-Branch Stent is a high-performance, cobalt chromium balloon-expandable coronary stent specifically developed for the complete treatment of the entire spectrum of coronary artery bifurcation disease.

"With the exception of Tryton's stent, no dedicated solution exists today that fully addresses these lesions," according to Tryton.

The results of the Tryton I (first-in-man) study were presented by Prof. Patrick Serruys, of **Erasmus University/Thoraxcenter** (Rotterdam, the Netherlands) and Ralf Müller, MD, of **Helios Heart Centrum** (Siegburg).

When the Tryton cobalt chromium bare metal stent was used with a standard drug eluting stent, no side branch restenosis was observed in the 30 patients treated. The initial core laboratory quantitative analysis reported a late loss of 0.27 ± 0.42 mm in the side branch and 0.12 ± 0.47 mm in the main vessel.

"This technology has the capacity to redefine the treatment of bifurcation lesions and resolve a frequent dilemma of the interventional cardiologist," said Professor Patrick Serruys, MD, head of the department of interventional Cardiology/Thoraxcenter, Erasmus Medical Center. 

Acquisitions

- **Angiotech Pharmaceuticals** (Vancouver, British Columbia) and **Symphony Medical** (Laguna Hills, California) reported that they have entered into an exclusive licensing agreement to employ one of Angiotech's PEG-based biomaterials as part of a prophylactic therapy envisioned to mitigate the onset of post-operative atrial fibrillation (POAF) for patients undergoing coronary artery bypass grafting and cardiac valve surgeries. Angiotech has been granted an equity position in Symphony in exchange for the exclusive license of Angiotech's technology in the field of POAF. Angiotech also will receive a royalty on end-user product sales should the product receive regulatory approval and is commercialized.

- **Avista Capital Partners** (New York) reported completing its acquisition of **Bristol-Myers Squibb Medical Imaging** (BMS-MI; Billerica Massachusetts), a supplier of imaging products for nuclear and ultrasound cardiovascular diagnostic imaging procedures. The \$525 million cash deal was first disclosed in December, two weeks after **Bristol-Myers Squibb** (New York) unveiled a restructuring plan to cut nearly 4,300 jobs worldwide, one-10th of its workforce; close more than half its manufacturing plants by 2010; and explore selling two other divisions, **Convatec** (Skillman, New Jersey), a wound-care products supplier, and its **Mead Johnson Nutritionals** (Evansville, Indiana) business. With completion of the transaction BMS MI will operate as an independent company under a new name.

- **Boston Scientific** (Natick, Massachusetts) said it has completed the sale of its cardiac and vascular surgery business **Getinge Group** (Stockholm, Sweden) for \$750 million in cash. The deal, first disclosed in November, was conditional on the approval of competition authorities concerned. Getinge said it would use the acquisition to establish a base for building a global cardiac surgery business. As part of its plan to "divest non-strategic assets and increase shareholder value," Boston Scientific reported in August that it wanted to sell its cardiac and vascular surgery units.

- **Exactech** (Gainesville, Florida), an orthopedic device manufacturer, reported closing on the acquisition of **Altiva** (Charlotte, North Carolina), a spinal products company. Exactech reported its exercise of its option and execution of a merger agreement to acquire Altiva in December, based on a valuation of \$25 million. Exactech's final payment of \$6.7 million was funded through a combination of \$5.1 million from its credit line and the issuance of about 75,000 shares of Exactech common stock. Exactech's final

payment of \$7 million will consist of a combination of cash and Exactech stock, expected to be funded from its current financing facilities. Altiva will continue to operate from its Charlotte headquarters and maintain separate sales, marketing, engineering and operational functions.

- **Greatbatch** (Clarence, New York) reported completing its previously reported purchase of **P Medical Holding** (d.b.a. **Precimed**; Orvin, Switzerland/Exton, Pennsylvania), a supplier of orthopedic technology, a deal moving Greatbatch into the orthopedics arena. Greatbatch paid roughly CHF 123 million in cash (\$125 million) for Precimed's outstanding shares and will pay additional earnings-based milestones of up to CHF 12 million in 2009. The deal was first disclosed last November. Greatbatch acquired Precimed's rights and obligations under an agreement to acquire the operations of another company, unnamed, in the orthopedic industry, that transaction expected to close early this year. Greatbatch manufactures medical device components for the cardiac rhythm management, neurostimulation, vascular, orthopedic and interventional radiology markets.

- **Lifecore Biomedical** (Chaska, Minnesota) said it will be bought by private equity firm **Warburg Pincus** through a tender offer, followed by a merger, for \$17 a share in cash, all told about \$239 million. Lifecore said the deal could close by the end of 1Q08. Lifecore makes biomaterials and devices through its two divisions: dental and hyaluronan. Lifecore has 30 days to solicit superior proposals from third parties. If the company accepts another offer, it would have to pay a \$1.5 million break-up fee to Warburg. If Lifecore accepts another offer after the 30-day go-shop period ends, there is a \$3 million break-up fee.

- **Roche** (Basel, Switzerland) sweetened its offer for **Ventana Medical Systems** (Tucson, Arizona) to \$89.50 a share in cash and the companies moved closer to completing their oftentimes awkward negotiations begun mid-1970. Ventana had said that the original unsolicited \$75-a-share offer did not reflect its true value, and Ventana shareholders had been cool to Roche's \$75-a-share offer, first disclosed at the end of June. The companies now value the deal at \$3.4 billion. The boards of both companies have approved a merger agreement at the improved offer price. The new offer represents a 19.3% premium to Roche's initial offer on June 27, and a 72.3% premium to Ventana's closing price on June 22. The companies entered a confidentiality agreement, allowing Roche to begin due diligence and have access to non-public information about Ventana.

Source: BioMedical Business & Technology

Business developments

Med-tech watchwords: consolidation, Asia

From *BB&T* Staff Reports

The year may be new, but the Big Picture story is the same one we've heard for a decade: Mergers and acquisitions in the medical technology industry will continue through 2008, according to **Jefferies & Company** (New York), a global investment bank and institutional securities firm.

What does seem new for the med-tech industry is the rapidly increasing influence of Asia.

The analysts at Jefferies are predicting that the largest market opportunities are in China, India and Eastern Europe, according to the firm's equity research report, "Themes & Tactics: U.S. Top Picks 2008," issued early last month. Bottom-line lower costs associated with manufacturing are driving this trend, Mark Richter, a device and diagnostics analyst for Jefferies, told *Biomedical Business & Technology*.

"As companies are looking for continued growth, they are looking to buy distributors internationally. It's an additional growth driver," Richter said. "Thirty-five percent of med-tech revenues come from international, and the companies are looking for more international growth.

"Companies that move into Asia will be helped because they can capture substantial savings in their costs," he said. "Inverness Medical is a classic example. They are shutting down manufacturing facilities in the U.S. and saving money. For every test they transfer overseas, they save 20 cents. There's tons of capacity in Asia and cost savings.

"CEOs are becoming less concerned about IP [intellectual property] violations as IP protection becomes more stringent and upheld over there," Richter said.

Inverness Medical Innovations (IMI, Waltham, Massachusetts), a developer of rapid point-of-care diagnostics, has been scooping up diagnostics firms at a rapid rate and is one of two "top pick" med-tech companies for Jefferies in 2008. And it is continuing to shift its manufacturing to China to garner huge costs savings.

Its numerous acquisitions in 2007 include **Cholestech** (Hayward, California), a maker of rapid diagnostic products, for \$326.3 million; **Matritech** (Newton, Massachusetts), a developer of protein-based diagnostics, for about \$36 million; **HemoSense** (San Jose, California), a developer of hand-held blood

coagulation monitoring systems, for \$165 million; **Biosite** (San Diego) for \$92.50 a share; and **Alere Medical** (Reno, Nevada) for \$302 million.

IMI "was our top pick last year too," Richter said. "It's got even more legs of growth for this year for a couple of reasons, including its acquisitions of Biosite and Cholestech."

The company also is planning to migrate tests from the emergency room to doctors' offices, opening up another avenue for increased revenues.

Jefferies' other favorite company is **Allergan** (Irvine, California). Allergan's ophthalmology and aesthetics portfolios, he said, should "continue to provide upside to Street projections over the next several quarters."

Richter predicts Allergan will pursue new acquisitions in 2008, particularly in the field of urology, to complement its development work for Botox in over-active bladder and its purchase of **Esprit Pharma** (Princeton, New Jersey) in October. In 2006, Allergan acquired **Inamed** (Santa Barbara, California) and its sector-leading Lap-Band system for gastric bypass.

Richter said reimbursement for the bariatric product will improve further following the launch of **Ethicon Endo-Surgery's** (Cincinnati) Realize band. Other Inamed products, including breast implants and dermal fillers, beat sales expectations in the most recent quarter, resulting in strong double- and triple-digit growth. "Allergan has raised its full-year guidance for both product lines, citing no evidence of any slowdown, which we believe bodes well for 2008," he said.

Overall, Richter said a weak consumer market and a weak dollar, combined with cheaper med-tech valuations, "could ignite significant buyout activity in 2008.

"Med-tech in general is delineated into the haves and have-nots," he said. "The mid- to large-cap consolidators and the small one-product companies have outsourced their R&D. When these small companies start executing, these larger companies will take them out."

Enrollment 'challenges' lead NMT to close migraine trial

A trial testing the closure of a patent foramen ovale (PFO), a hole in the heart that fails to close after birth – in this case specifically targeting the relief of migraine — has been terminated by the sponsoring company, **NMT Medical** (Boston), which is one of two major players in the PFO-closure sector.

That application has been seen by companies developing PFO closure devices as an important

expansion, and validation, of these device systems. But NMT Medical said last month that it is closing down its PFO/migraine trial, MIST II. In particular, it cited "challenges" in patient enrollment.

The MIST II trial was evaluating the safety and efficacy of its BioStar implant for the treatment and prevention of migraine headaches in patients with PFO. It was designed as a double-blinded trial, aiming to randomize about 600 patients with PFO to either PFO closure with BioStar or a control arm. The device, made of bioabsorbable collagen matrix material, is designed to promote closure of structural heart defects, such as PFO.

The move is expected to save the company about \$14 million over the next two to three years. NMT said it plans to spend part of that savings on CLOSURE I, its pivotal PFO/stroke and transient ischemic attack (TIA) trial.

John Ahern, NMT's president/CEO, told *BB&T* that the criteria that had to be met by trial enrollees were "far more restrictive than anyone would have anticipated." As a result of the rigorous patient screening process, he said, patient randomization progressed more slowly than anticipated.

The company originally had expected MIST II to be a "fast-enrolling trial and that everything would get done and buttoned up in a year," Ahern said, but this clearly was not the case.

MIST II was being conducted at 20 centers in the U.S. The trial was approved by FDA in September 2005 and redesigned in August 2006. More than 1,400 patients had been screened for enrollment in the trial, but only a handful of those patients met the requirements to be randomized, Ahern said.

Though citing the potential money saved, the company said that the decision to close the trial was based solely on the strict enrollment requirements, he said, not cost.

Ahern said that this was an important, yet difficult, decision for the company. "We determined that it was in the best interest of NMT and its shareholders to terminate further enrollment in MIST II to better allocate those resources toward our ongoing stroke initiatives," he said.

The company will explore other regulatory pathways to gain approval for BioStar in the U.S., according to Ahern. The device was launched in Europe and Canada last July after receiving the CE mark in Europe and a Health Products and Food Branch medical device license in Canada.

"While NMT continues to believe in the relationship between PFO and migraine, it has become clear that an acceptable enrollment dynamic was not possible and completing the study would require more time and financial resources than we are willing to commit at this time," he said. "Therefore, we believe it is in the best interest of those involved to close the

study."

The trial's co-principal investigators – Stewart Tepper, MD, associate clinical professor of neurology at the **Yale University School of Medicine** (New Haven, Connecticut) and Mark Reisman, MD, director of cardiovascular research at **Swedish Medical Center** (Seattle) – agreed that a PFO/migraine connection still needs to be studied. "Future study designs should address patient inclusion/exclusion criteria and their impact on the enrollment process," Tepper said.

Ahern said that results of the MIST I trial, conducted in the UK, are expected to be published in *Circulation* early this year. That trial, he said, supports further investigation into the PFO/migraine connection.

AGA Medical (Plymouth, Minnesota), one of NMT's primary competitors in this sector, launched a Phase III trial in 2006 with its Amplatzer PFO closure device to examine the link between PFO and migraine headaches. AGA also is engaged in a study examining the ability of PFO closure to prevent stroke.

Novadaq imaging system gets FDA approval for organ transplants

Novadaq Technologies' (Toronto) SPY imaging system received FDA 510(k) clearance in January for organ transplant surgery, allowing surgeons to visualize blood flow to the new organ while the patient still is on the operating table.

The creation and maintenance of adequate blood supply to the newly transplanted organ is critical to the success of transplant surgery. Inadequate blood flow can lead to serious complications such as organ thrombosis and allograft failure.

"Our product allows visualization of blood flow to any organ," Arun Menawat, PhD, president/CEO of Novadaq, told *BB&T*. "When they do transplant surgeries, they are interested in knowing the quality of the organ and whether or not it's receiving the blood supply. Once they confirm that, they want to know if the blood is perfusing properly to all areas of the organ."

SPY use in transplant surgery is expected to create endpoints for the surgery that allows surgeons to quickly assess whether or not the transplant has been successful.

"Over the long term, this should facilitate more organ transplants," Menawat said.

SPY was originally cleared by the FDA in 2005 for use in coronary artery bypass graft surgery. Last year, Novadaq increased its sales team to facilitate more

SPY sales in the U.S. Menawat said 100 units already are installed in U.S. hospitals.

"Intra-operative fluorescence imaging using the SPY System has opened a new portal in transplant surgery. Potentially, the days of qualitative assessment of organ appearance, pulse quality, and simple quantitative vascular flow measurements using electromagnetic devices as the sole measurement of an organ transplant are limited," said Edmund Sanchez, assistant director of transplantation services at **Baylor University Medical Center** (Dallas).

"Our familiarity study of SPY in liver, kidney, and pancreas transplant has demonstrated many potentially beneficial aspects of intra-operatively assessing organ perfusion through imaging," he said. "The success of organ transplantation is highly dependent on vascular patency and allograft perfusion. The SPY System has allowed intra-operative visualization of both immediately after reperfusion."

SPY has a camera head that is arrayed on an articulating arm to facilitate use for different parts of the body.

In addition to the clearance for organ transplant, Novadaq has received a broader indication for the use of SPY in cardiovascular surgery, beyond the originally cleared indication in coronary artery bypass.

Stryker picking up Curis' BMP-7 program where Ortho left off

Curis (Cambridge, Massachusetts) has licensed its bone morphogenetic protein-7 (BMP-7) program to **Stryker** (Kalamazoo, Michigan), ending a seven-month search to replace former partner **Ortho Biotech Products** (Bridgewater, New Jersey).

Michael Gray, CFO of Curis, termed Stryker "the ideal partner" to develop and manufacture BMP-7, which he called a "complicated protein."

Stryker certainly has the experience to get the job done. The company already markets a BMP-7 product used to stimulate bone healing in certain spinal fusion and long-bone procedures. That product, called OP-1, combines recombinant human BMP-7 with a purified Type I collagen carrier.

Stryker gained access to the BMP-7 patents through a 1985 deal with **Creative BioMolecules**, which later became a part of Curis. But Stryker's license previously covered the use of BMP-7 only in the repair or regeneration of local musculoskeletal tissue defects and dental defects. Curis initially licensed all other BMP-7 rights to **Johnson & Johnson's** (New Brunswick, New Jersey) Ortho unit.

Under the Ortho deal, Curis received \$3.5 million up front and might have gotten up to \$30 million in

milestone payments if a BMP-7 product had gained FDA approval for the treatment of kidney disease. But the program never made it past pre-clinical development, and Ortho handed back all rights earlier this year.

Now Stryker is picking up those rights in exchange for \$1 million up front and undisclosed clinical, regulatory and sales milestones.

Curis said global commercialization of a BMP-7 product could result in \$41 million in payments, \$14 million of which would go to a former collaborator of Creative BioMolecules if the product is associated with chronic kidney disease.

Pre-clinical data thus far indicate that BMP-7 might indeed be applicable in treating conditions associated with chronic kidney disease, such as fibrosis and blood vessel calcification. The signaling protein also has been linked to upkeep of the skeleton and vascular system, and Gray mentioned stroke as another possible indication.

In other Stryker news, the company said last month that two of its products cited in an FDA warning letter recently posted by the agency offer no risk to patient safety, but that it is recalling the products anyway because they "in some cases exceeded" its own internal criteria.

The company said that because of this "deviation from internal specifications," it is voluntarily recalling its Trident PSL and Hemispherical Acetabular Cups manufactured in its Cork, Ireland, facility.

There is "no clinical evidence to indicate that the products mentioned in the letter represent a risk to patient safety," it said.

The finding of deviations from specification was the result of "a comprehensive review and investigation" of its internal processes, Stryker said. And while it noted the exceeding of its internal standards, it said that the review indicated that that all Trident Acetabular products manufactured in Cork, Ireland, have met all U.S. and international performance standards for sterility and biocompatibility. It also cited "independent clinical evidence" that favorable performance of these devices "compares . . . with other high-performing acetabular devices."

Northstar Neuroscience trial for cortical stimulator misses endpoint

Northstar Neuroscience (Seattle) stock plunged 83% in the latter part of January on news that its EVEREST pivotal trial evaluating cortical stimulation to improve hand and arm function in stroke survivors failed to meet its primary efficacy endpoint. On a day when U.S. stock indices plummeted generally follow-

ing huge falloffs on global markets, Northstar's stock closed at \$1.37 in heavy trading – 16 million compared to average volume of 290,000.

"To put it mildly, we are extremely surprised and disappointed by these results," said John Bowers, president/CEO of Northstar, during a conference call.

Despite the stock tumble, Northstar is in a solid financial position to press forward with other neurostimulation indications and applications. As of Dec. 31, the company had \$80 million in cash and investments. Northstar had the most successful med-tech IPO in 2006, raising more than \$100 million.

Hopes in the stroke sector were high for EVEREST, which was designed to determine whether cortical stimulation in conjunction with rehabilitation therapy would provide greater gains in hand and arm function for stroke victims and improve on daily living activities, compared to rehabilitation therapy alone.

Cortical stimulation therapy is a method for the precise delivery of low levels of electricity to the outer layer of the brain via an implanted stimulator system.

At the four-week follow-up, 30.8% of the patients receiving cortical stimulation achieved the threshold of clinically meaningful improvement for the composite primary efficacy endpoint defined in the study protocol, compared to 29.1% of the patients in the control group.

The primary efficacy endpoint required a 20% absolute difference between these two groups. Further analyses of the components of the primary endpoint also failed to show a statistically meaningful difference between investigational and control subjects.

Northstar is in the process of collecting and processing data through 24 weeks in readiness for analysis of longer-term follow-up and other secondary outcome measures. "While this process is not yet complete, we've conducted a preliminary review of some of these longer-term data," Bowers said. "Based on this initial review, we believe that our subsequent formal analysis of these data is unlikely to provide sufficient evidence of efficacy to support a PMA submission for our therapy."

Synergy raises \$143M for new fund focused on med-tech

Synergy Life Science Partners (Portola Valley, California), a venture capital limited partnership focused on investments in emerging medical device technologies, reported the completion of fundraising for its debut fund with \$143 million in committed cap-

ital. The firm said it has closed on six investments to date.

Tracy Pappas, CFO of Synergy, told *BB&T* that the firm's goal is to invest the money in large therapeutic areas, primarily cardiovascular disease, orthopedic and spinal diseases and injuries, metabolic disorders such as diabetes and obesity, neuron-mediated disorders, oncology and ophthalmic conditions.

Founded in 2006 by John Onopchenko; Richard Stack, MD; and William Starling, Synergy invests directly in private, early-stage device firms or emerging companies that are developing disruptive technologies to address unmet or under-served human healthcare needs.

"We're excited about our fundraising accomplishments and our early portfolio," said Onopchenko, a managing director of Synergy. "We've received a great deal of support from our new limited partners, who share our vision for building and accelerating the delivery of innovative medical products. Our goal is to help dramatically improve the standard of patient care in our therapeutic categories, while generating exceptional returns to the customers of and investors in our portfolio companies."

Tracy Harris, director for Parish Capital Advisors, said Synergy's "innovative strategy" for device investing is "an ideal fit for our portfolio."

"We believe the unmatched industry expertise of the managing directors and the fund's strategy of targeting early-stage companies in large therapeutic areas position Synergy to offer outsized returns for investors," Harris said.

Synergy said it has the right to invest in companies initiated by Synecor, a medical device incubator co-founded by Stack and Starling.

QLT says it will sell U.S. assets and lay off 115 'to enhance value'

QLT (Vancouver, British Columbia) last month reported that following a months-long review, it will implement several initiatives, including the sale of **QLT USA**, whose primary assets include the Eligard product line for prostate cancer, Aczone, a dermatology product for the treatment of acne vulgaris, and the Atrigel drug delivery system, either in a single transaction or series of transactions.

Eligard is an extended-release injectable depot available in one-, three-, and four-month formulations. That product was acquired through QLT's 2004 acquisition of **Atrix Laboratories** (Fort Collins, Colorado) and is partnered with **Sanofi-Aventis** (Paris).

The company also said it would sell the land and

building associated with and surrounding the company's corporate headquarters in Vancouver and reduce by 115 its employee headcount with planned future reductions as assets are divested.

The company said it intends to retain "adequate proceeds" from these sales in order to repay the outstanding convertible debt in September. In addition, it will evaluate options for the optimal use of the balance of cash proceeds from the asset sales and will provide updates on these options at the appropriate time.

"Following a comprehensive review of available options, the QLT board has concluded that seeking offers for the sale of QLT USA as a whole or of its assets is a key initial step in executing our strategy," said Boyd Clarke, QLT's chairman.

QLT said it plans to focus its ongoing business primarily on its Visudyne franchise and its clinical development programs related to its punctal plug delivery technology and its photodynamic therapy dermatology technology.

QLT develops pharmaceuticals in the fields of ophthalmology and dermatology. In addition, it utilizes three technology platforms, photodynamic therapy, Atrigel and punctal plugs with drugs, to create products .

\$90 million payment by Illumina ends dispute with Affymetrix

Affymetrix (Santa Clara, California) and **Illumina** (San Diego) reported an agreement that settles patent infringement litigation between them. Illumina agreed to pay Affymetrix \$90 million, without admitting any liability. Affymetrix in turn agreed to dismiss all lawsuits it had brought against Illumina. Illumina agreed to dismiss its counterclaims in the lawsuits.

In exchange for the payment, Affymetrix granted Illumina, its affiliates and its customers a perpetual covenant not to sue for making, using or selling any of Illumina's current products, evolutions of those products and services related thereto.

Affymetrix said it also extended the covenant not to sue for four years for making, using or selling Illumina products or services based on future technology developments.

The covenant not to sue covers all fields other than photolithography, the process by which Affymetrix manufactures its arrays and a field in which Illumina does not operate.

In March 2007, the U.S. District Court for the District of Delaware ruled that Illumina had infringed

patents held by Affymetrix and Illumina then said it would appeal the verdict. In October, Affymetrix added additional infringement claims to its suit against Illumina, and court action was expected to begin in early February.

The settlement will resolve all litigations and payments resulting from lawsuits Affymetrix commenced against Illumina in U.S. District Court for the District of Delaware, in Regional Court in Düsseldorf (Germany), and in High Court of Justice, Chancery Division - Patents Court in London.

Illumina manufactures tools and integrated systems for the large scale analysis of genetic variation and biological function.

Q-Ray's ionization 'blather' and 'bunk' results in \$16 million fine

The U.S. Court of Appeals for the Seventh Circuit last month upheld a district court ruling requiring marketers of the "Q-Ray Ionized Bracelet" to give up almost \$16 million in net profits as part of a maximum \$87 million they must pay in refunds to consumers.

The court concluded: "The magistrate judge did not commit a clear error, or abuse his discretion, in concluding that the defendants set out to bilk unsophisticated persons who found themselves in pain from arthritis and other chronic conditions."

The court found that the defendants' claims about how their product worked, for example, through "ionization" or "enhancing the flow of bio-energy" were "blather." Easterbrook wrote, "Defendants might as well have said: 'Beneficent creatures from the 17th Dimension use this bracelet as a beacon to locate people who need pain relief, and whisk them off to their home world every night to provide help in ways unknown to our science.'"

The FTC filed its case in 2003, alleging that **QT Inc.**, **Q-Ray Company** and **Bio-Metal**, located in Illinois, and their owner, Que Te Park, made false and misleading advertising claims that the Q-Ray bracelet provided immediate and significant pain relief, and that they deceptively advertised their refund policy.

In 2006, the federal district court in Chicago found in favor of the FTC. In November 2006, the court required the defendants to turn over a minimum of \$22.5 million in profits and up to \$87 million in refunds to consumers who bought the bracelets between Jan. 1, 2000, and June 30, 2003, when the bracelet was advertised on infomercials, Internet sites and at trade shows.

The district court later reduced the disgorgement amount to \$15.9 million. —————

Agreements

- **Aesculap** (St. Louis) reported being awarded supplier agreements with **Amerinet** (St. Louis), a national group purchasing organization. The two agreements, effective Feb. 1, 2008, through Jan. 31, 2011, provide Amerinet's acute care members access to Aesculap's sutures and Histoacryl tissue adhesive products. Aesculap and Amerinet already had a supplier contract for sutures, and the new agreement gives Amerinet members access to Histoacryl tissue adhesive, one of the company's latest wound closure products, approved by FDA in 2007. Histoacryl is manufactured by B. Braun (Bethlehem, Pennsylvania) and has been marketing outside the U.S. for more than 30 years. In the U.S., Histoacryl is distributed by the Aesculap subsidiary of B. Braun in partnership with TissueSeal (Ann Arbor, Michigan).

- **DexCom** (San Diego) reported a development agreement with **Animas** (West Chester, Pennsylvania) to integrate DexCom's continuous glucose monitoring (CGM) technology into Animas insulin pumps. The new product will be based on Animas' advanced pump technology and DexCom's Seven, a seven-day continuous glucose monitoring system, enabling the Animas pump to receive glucose readings and display this information on the pump's color screen. Animas will contribute up to \$750,000 to DexCom to offset certain development, clinical and regulatory costs. DexCom said that it anticipates the integrated system to be available to patients in 2009 or early 2010.

DexCom also signed an agreement with **Jan Insulet** (Bedford, Massachusetts) to integrate DexCom's continuous glucose monitoring technology into the wireless, hand-held OmniPod System Personal Diabetes Manager (PDM). In addition to programming the patient's insulin delivery, the PDM with integrated DexCom technology will receive and display continuous glucose readings from DexCom's wearable sensor transmitter.

- **Home Diagnostics** (Fort Lauderdale, Florida) reported an agreement to be the exclusive supplier of a co-branded blood glucose monitoring system for **Rite Aid** (Harrisburg, Pennsylvania) drug stores. Home Diagnostics' TRUEtrack will be available as the TRUEtrack for Rite Aid blood glucose monitoring system at 5,000 Rite Aid stores across the U.S. starting in March. TRUEtrack uses biosensor and chip coding technology to generate results in 10 seconds from a single microliter of blood.

- **iCAD** (Nashua, New Hampshire), a provider of computer-aided detection (CAD) solutions for the early identification of cancer, reported an agreement

with **ACR Image Metrix** (Philadelphia) to conduct a multi-reader clinical study of iCAD's CT Colon product, for use with virtual colonoscopy. iCAD will work with ACR Image Metrix to develop and execute a clinical study to support FDA approval of CT Colon CAD.

- **Ivivi Technologies** (Northvale, New Jersey), a developer of non-invasive, electrotherapeutic technologies, said it has signed a new three-year contract with **Regency Hospital Company** (Alpharetta, Georgia), an owner/operator of long-term, acute-care hospitals across the U.S. The contract will facilitate Regency's expanded use of Ivivi's Roma3 pulsed electromagnetic field device for the treatment of chronic wounds. Ivivi will provide Regency facilities with several packages that are priced using a fixed monthly rental rate per facility vs. the previous agreement's per-unit rental rate.

- **Masimo** (Irvine, California) reported a three-year supplier agreement with **HealthTrust Purchasing Group** (Brentwood, Tennessee) that provides HealthTrust members access to Masimo SET pulse oximetry and Masimo Rainbow SET monitoring technologies. Masimo said that the addition of HealthTrust expands its GPO contracts to include all 10 of the nation's top GPOs, allowing hospitals and other care providers access to Masimo SET and Masimo Rainbow SET technologies.

- **Premier Purchasing Partners** (Charlotte, North Carolina) reported new agreements for surgical instrument tray reprocessing services/sterilization, a new contracting category, have been awarded to **Aesculap** (Center Valley, Pennsylvania); **American Endoscopy Services** (Brentwood, Tennessee), and **SRI/Surgical Express** (Tampa, Florida). The service provides customized surgical instrument sets on a per-procedure fee basis. The 36-month agreements, which took effect Jan. 1, are available to acute-care and continuum-of-care members of the Premier alliance.

- **Rubicon Genomics** (Ann Arbor, Michigan) reported a collaboration with **OncoMethylome Sciences** (Durham, North Carolina/Liege, Belgium) to identify biomarkers for early detection of cancer. Rubicon said it will use its MethylPlex platform to carry out the analysis. Additionally, Rubicon granted OncoMethylome an option to licensing markers resulting from the collaboration. Rubicon is a developer of proprietary MethylPlex-based tests for non-invasive diagnosis of cancer and other diseases, as well as kits and services to facilitate gene-based research and drug development.

Source: BioMedical Business & Technology

Market & technology updates

AHRQ: Data offers no evidence for one prostate treatment better than another

Patients who undergo complete prostate removal are less likely to experience urinary incontinence or other complications if the operation is done by an experienced surgeon in a hospital that does many of the procedures, according to a report funded by the Agency for Healthcare Research and Quality (AHRQ), part of the U.S. Department of Health and Human Services.

However, the new report concludes that scientific evidence has not established surgery or any other single treatment as superior for all men. The analysis compared the effectiveness and risks of eight prostate cancer treatments, ranging from prostate removal to radioactive implants to no treatment. An article based on the report is posted on the online version of the *Annals of Internal Medicine*.

"This report is a reminder that patient outcomes may vary according to treatment settings," said Carolyn Clancy, MD, director of AHRQ. "But this analysis also underscores a broader message: when it comes to prostate cancer, we have much to learn about which treatments work best, and patients should be informed about the benefits and harms of treatment options."

In 2007, about 218,000 men were diagnosed with prostate cancer, and about 27,050 men died from the disease, according to figures from AHRQ.

The lifetime risk of being diagnosed with prostate cancer has nearly doubled to 20% since the late 1980s, due mostly to expanded use of the Prostate Specific Antigen (PSA) blood test. But the risk of dying of prostate cancer remains about 3%. Therefore, considerable overdiagnosis and overtreatment may exist.

The U.S. Preventive Services Task Force, a panel of outside experts convened by AHRQ that makes independent evidence-based recommendations, maintains there is insufficient evidence to recommend for or against PSA testing for routine prostate cancer screening. PSA tests can detect early-stage cancer when it is potentially most treatable but also lead to frequent false-positive results and identification of prostate cancers unlikely to cause harm.

AHRQ said that its report is based on a review of

592 published articles, compared eight prostate cancer strategies: complete surgical removal of prostate and related tissue; minimally invasive surgery to remove the prostate; external radiation; radioactive implants; destruction of cancer cells through rapid freezing and thawing; removal of testicles or hormone therapy; high-intensity ultrasound; and no immediate treatment, also known as "watchful waiting."

The report, compiled by AHRQ's Minnesota Evidence-based Practice Center, is intended to provide evidence-based information so that patients, clinicians and others can make the best treatment decisions possible. Among its conclusions:

Not enough scientific evidence exists to identify any prostate cancer treatment as most effective for all men, especially those whose cancers were found by PSA testing. However, more than 90% of patients reported they would make the same treatment decision again, regardless of the treatment they received.

AHRQ said that the chances for bowel problems or sexual dysfunction are similar for surgery and external radiation. Leaking of urine is at least six times more likely among surgery patients than those treated by external radiation.

One study showed that men who choose surgery over watchful waiting are less likely to die or have their cancer spread. The benefit appears to be limited to men under 65. However, because few patients in this study had cancer detected through PSA tests, it is unknown if this finding would apply to those whose cancers were detected through PSA screening. Another smaller study showed no difference in survival between surgery and watchful waiting.

Among patients who choose surgery, urinary complications and incontinence are less likely if their surgeons performed more than 40 prostate removals per year.

Surgery-related deaths, urinary complications and readmissions were lower and hospital stays were shorter in hospitals that performed more prostate removals.

A lack of research makes it impossible to compare several treatments: rapid freezing and thawing (cryotherapy); minimally invasive surgery (laparoscopic or robotic assisted radical prostatectomy); testicle removal or hormone therapy (androgen deprivation therapy); and high-intensity ultrasound or radiation therapy.

Adding hormone therapy prior to prostate removal does not improve survival or decrease recurrence rates, but it does increase the chance of adverse events.

Combining radiation with hormone therapy may decrease mortality. But compared with radiation treatment alone, the combination increases the chances of impotence and abnormal breast development.

Also from AHRQ: needed, better systems for error reporting

The “rubber” concerning clinical mistakes meets the “road” in the minds of physicians — especially in the methods available for reporting errors, according to another new study by the Agency for Healthcare Research and Quality. The study suggests that there is a clear need for updating and formalizing the systems for reporting these mistakes.

Carolyn Clancy, MD, head of AHRQ, said in early January that a new survey shows that physicians “say they want to learn from errors that take place in their institution to improve patient safety. We need to build on that willingness with error-reporting programs that encourage their participation.”

She says the study indicates that physicians are willing to report and learn from medical errors, rather than, according to the general perception, that they resist doing this. Because most doctors think that current systems to report and share information about errors are inadequate, they rely instead on informal discussions with their colleagues.

“Consequently,” the organization said in a statement, “important information about medical errors and how to prevent them often is not shared with the hospital or the healthcare organization.”

“These findings shed light on an important question — how to create error-reporting programs that will encourage clinician participation,” Clancy said.

To assess physicians’ attitudes about communicating errors with their colleagues and healthcare organizations, study authors used a 68-question survey to poll a geographically diverse group of more than 1,000 physicians and surgeons practicing in rural and urban areas in the states of Missouri and Washington, between July 2003 and March 2004.

Most physicians reported that they had been involved in an error — 56% reported a prior involvement with a “serious error,” 74% with a “minor error and 66% with a near miss. More than half (54%) agreed with the statement that “medical errors are usually caused by failures of care delivery systems, not failures of individuals.”

Other findings:

- Almost all (95%) physicians agreed that they needed to know about errors in their organization to improve patient safety, and 89% agreed that they should discuss errors with their colleagues.

- 83% said they had used at least one formal reporting mechanism, most commonly reporting an error to risk management (68%) or completing an incident report (60%).

- Few physicians believed that they had access to

Workshop on computer methods for cardio devices

FDA and the National Heart, Lung, and Blood Institute of the National Institutes of Health will hold a workshop on computer methods for development of cardiovascular devices, March 18-19, at the **Bethesda Marriott** (Bethesda, Maryland).

Topics covered will include the use of simulations to study hemodynamics and blood flow, along with broader issues impacting the regulation of cardiovascular modeling.

To register for the workshop, call B.L. Seamon at 301-577-0244.

a reporting system that was designed to improve patient safety, and nearly half (45%) did not know if one existed at their organization.

- Only 30% agreed that current systems to report patient safety events were adequate.

MedPAC seeks Medicare funding linked to accountability

The Medicare Payment Advisory Commission (MedPAC), meeting in mid-January, offered a preview of what might appear on the commission’s report to Congress in June regarding fee-for-service medical care.

Another theme of the meeting was that public and private payers have similar problems and should adopt similar approaches.

MedPAC staffer David Glass said that “sustainability might still be an issue” even if quality of care improves. He referred to the recent Congressional Budget Office report that took the position that the higher cost per beneficiary, not the greater number of beneficiaries, “is the prime driver of cost growth.”

“We would want any policy to promote accountability and care coordination,” Glass said. Policy should also emphasize incentives to “higher efficiency — both lower-cost production and higher quality — rather than increases in volume.”

In a statement that seemed to hint at potential further privatization of Medicare, Glass said that “promoting alignment with the private sector would provide greater leverage and decrease administrative burden.”

He said: “The basic problem with the fee-for-service system is . . . reward for services” rather than outcomes, and that “marginal rewards may be insufficient to change [provider] behavior.”

Among the potential changes to Medicare pro-

posed in the past is the concept of the medical home, but Glass said that bundled payments might also have an ameliorative impact on Medicare inflation.

However, a relative newcomer to the table drew attention. Glass said that the accountable care organization (ACO) "is a broader concept" that would put the patient in a system that "would be held accountable for costs and outcomes."

An ACO would consist of doctors, hospitals and other providers that would offer seamless care throughout the stages of treatment.

This kind of coordination would seemingly require integrated healthcare information technology and also that doctors would be willing to give up at least some autonomy.

Needless to say, other tripwires abound. Given that such a system would involve more than one provider and more than one type of provider, Glass asked rhetorically: "Should incentives be based on individual or group performance?" He said the answer would indicate willingness to participate.

Specialty hospital group says OIG report is 'blatantly false'

Physician-owned specialty hospitals have been the target of congressional ire for a pair of incidents involving fatalities, but they have also been the subjects of reimbursement activity on the part of the Centers for Medicare & Medicaid Services as well. A recent report by the Office of Inspector General (OIG) at the Department of Health and Human Services cast an even less-flattering light on these hospitals, but an association for physician-owned hospitals (POHs) blasted the report as inaccurate and a reflection of shoddy work by OIG.

The history of the POH is replete with controversy. CMS had imposed a ban on payments to physician-owned specialty hospitals in 2003 over concerns about resource use, which was lifted in October 2006. Also, the Medicare Modernization Act of 2003 imposed an 18-month moratorium on development of any new such hospitals.

Much of the recent controversy revolves around two episodes, one in 2005 and one in 2007, in which a patient died after a specialty hospital transferred the patient to another hospital via a 911 call. Both patients had elective surgeries and neither hospital had a physician on duty when the emergency occurred. These and other considerations led the Senate Finance Committee to request that OIG conduct a review of these hospitals.

Among the OIG's findings are that more than one

in five of the 109 hospitals reviewed had no written policies for evaluating and dealing with emergency situations, which is a CMS requirement. OIG also said in its report that 34% of the hospitals rely on 911 services for emergency care and that less than a third of the 109 had a physician on site at all times.

Molly Sandvig, executive director of **Physician Hospitals of America** (Sioux Falls, South Dakota) told *BB&T*, "We continue to support the OIG's recommendations to CMS," which included development of a system to identify and regularly track physician-owned specialty hospitals and to ensure that these hospitals have a registered nurse on site 24/7.

However, Sandvig said of the OIG's conclusions: "We're confident that it's blatantly false. It's either a case of people at OIG in not understanding what they're reading" or not correctly interpreting CMS regulations, he said, adding that "It appears that there was a lack of follow-up" to validate the initial findings when they were contested.

"There were 37 hospitals named in the report as having suspect emergency policies, using 911 for purposes of stabilization," Sandvig said, adding "none of the hospitals I talked to have policies that matched the OIG's accusations."

OIG gives okay to gainsharing program

In other OIG-related news, two recent decisions show that hospitals and doctors can walk the fine line of entering into cooperative agreements. In a Dec. 28 decision, OIG said that it would not oppose an arrangement made between a hospital and a cardiac surgery group in which "the hospital agreed to pay the surgical group a share of cost savings directly attributable to specific changes in the group's operating room practices."

The changes in part involve an evaluation of cardiac devices and supplies that the surgeons would standardize. The surgeons also agreed to "refrain from opening disposable components of the cell saver unit until the patient experiences excessive bleeding." Other agreed-upon changes include as-needed use of a series of surgical supplies and the substitution of unspecified surgical products for those of lower cost.

The surgical group, according to the decision memo, "is the only group of cardiac surgeons that practices at the hospital," described as an acute care hospital doing business with Medicare and Medicaid. All identifying information was purged by OIG before posting to the web site.

OIG said that part of the rationale for allowing the arrangement was that "the circumstances and

safeguards of the arrangement reduced the likelihood that the arrangement was used to attract referring physicians" due to the fact that participation was limited to surgeons already with the practice. OIG also noted that while "many of the recommendations . . . are simple common sense, they did represent a change in operating procedure." Still, because the changes "carried some increased liability risk for the physicians," it is "not unreasonable for the surgeon to receive compensation for the increased risk."

In a similar decision issued in connection with a gainsharing arrangement between a hospital and an anesthesiology practice, OIG said that it would not object to shared savings engendered by product substitutions and standardizations as well as for the use of as-needed items. In this last category was the elimination of the use "a specific drug, and a device to monitor patients' brain function" during cardiac procedures.

The OIG memo also noted that the hospital program administrator "tracked and measured the hospital's performance of the covered cardiac procedures against the quality indicators established by the **Society of Thoracic Surgeons** (Washington) throughout the base year and contract year," concluding that no cost-sharing was predicated on "procedures involving reductions in historical STS quality indicators."

CMS eyes standards rewrite for obstructive sleep apnea

The potential for obstructive sleep apnea (OSA) leading to heart disease makes the condition compelling for insurance coverage. The Centers for Medicare & Medicaid Services has proposed rewriting its standards for reimbursement for continuous positive airway pressure (CPAP) devices as well as for what the agency will accept as a diagnostics for obstructive sleep apnea (OSA).

In January 2007, CMS received a letter from the **American Academy of Otolaryngology** (AAO; Alexandria, Virginia) to take another look at whether home testing should be sufficient to diagnose the condition. According to the association's letter, in-lab polysomnography is "an expensive test that is not widely available."

The AAO letter stated that 24% of men employed by the federal government in Wisconsin had OSA, as did 9% of women in that same group, with the threshold of five events per night as a diagnostic criterion. AAO also said that "several studies document the prevalence increases with age can certainly support a prevalence of 10% or more for Medicare patients 65 or

older." And "more than 800,000 drivers were involved in OSA-related motor vehicle collisions in 2000, costing \$15.9 billion and 1,400 lives," it said.

One testing paradigm recommended by AAO is to use CPAP machines in the home.

Anyone who is suspected of suffering from a sleep-related breathing disorder but not able to tolerate the use of CPAP would then be forwarded to in-lab polysomnography, a test requiring extensive wiring and an overnight stay in a sleep lab.

The agency issued a decision in mid-December proposing that coverage for CPAP, as an in-home diagnostic, will be initially limited to 12 weeks to aid in the effort to positively identify those with OSA, and Medicare would pay off the device for any such patients who respond positively.

BioEnterprise: devices trump pharma in interest, not investment

In the Midwest, medical devices are viewed as a primary sector of interest for investors, surpassing even biopharmaceuticals, according to the Midwest Health Care Venture Survey conducted by **BioEnterprise** (Cleveland), results released in mid-January.

A total of 45 healthcare investors from across the country responded to the survey, with respondents represent funds with a strong interest in the healthcare technology space. Of those, 95% invest more than a quarter of their funds in healthcare.

About 82% of the respondents reported that they invest in at least one Midwest healthcare venture each year, and 90% identified themselves as "knowledgeable" about Midwestern healthcare opportunities.

The telling evidence of their primary focus comes from 94% of the 45 respondents indicating an interest in medical devices, with 65% of the respondents indicating an interest in biopharmaceuticals (respondents could indicate interest in multiple areas). Nearly 55% indicated an interest in healthcare services, and 44% showed interest in healthcare software.

About 72% of investors rated medical device deal flow to be strong in the Midwest; while only 16% rated Midwest biopharmaceutical deals as strong.

But when it comes to actual investor dollars being spent, data seems to suggest that the biopharmaceutical sector was more robust in terms of investments attracted. Biopharmaceutical companies captured nearly 50% of the invested dollars in the region, according to the 3Q07 Midwest Health Venture Report – suggesting a higher per-deal investment in pharmaceuticals than in devices or healthcare software.

So if more money is being spent in biopharmaceutical deals, why is it that medical devices or so popular? Is it a perception issue, or a change in traditional thinking?

Baiju Shah, president of BioEnterprise, said, "As to investors' perceptions, it is interesting that the Midwest's strong historic position in medical devices continues to drive the regions' reputation, even though actual investments show that Midwest biopharmaceutical companies are drawing significantly more dollars [per deal] than medical device companies."

The survey also illustrates the tidal wave of healthcare investments that have bombarded the Midwest of late.

Midwest healthcare start-ups reported a record-breaking \$1 billion in total investments for 104 companies through 3Q07, according to a report released by BioEnterprise last October.

The previous report showed that by industry subsector, the investment funding broke down as follows:

- Biopharmaceutical companies, \$591 million.
- Medical device companies, \$251 million.
- Healthcare software and service companies, \$158 million.

"Not surprisingly, the 2007 survey results mostly reflect what we have seen in terms of actual venture investing in the Midwest," Shah said. "Through the third quarter, Midwest healthcare start-ups reported a record-breaking \$1 billion in venture investments, up from \$783 million reported in 2006. Clearly, investors are finding good opportunities in the Midwest and the deals are performing for them."

Some of the regions leading in investments are Minneapolis, Cleveland and Pittsburgh. These three regions have the highest reputations among venture investors for the quality of healthcare deals, Shah said. Wisconsin, Indianapolis, Cincinnati, St. Louis round out the middle, while Chicago, Columbus, Kansas City and Kentucky are at the bottom of the list.

CMS says healthcare inflation slowed a bit in 2006

CMS reported some good news and bad news early last month. The good news: the acceleration of healthcare inflation in 2006 was less than in the previous year. The bad news: healthcare spending rose 6.7% in 2006.

The agency's Jan. 8 announcement said that spending in 2006 came to \$2.1 trillion, or more than \$7,000 per person. The figure for 2005 is \$6,649 per

person. However, the agency noted that the share of GDP "remained relatively stable in 2006 at 16.0%, up by only 0.1% from 2005."

Thanks largely to Medicare Part D, out-of-pocket spending grew only 3.8% in 2006, a relatively torpid pace compared to the 5.2% growth the previous year. This category, all told, "accounted for 12% of national health spending in 2006," but has "steadily declined since 1998, when it accounted for 15% of health spending."


According to the report, "[t]otal prescription drug spending in 2006 was \$216.7 billion, compared to \$199.7 billion in 2005." Public funding sources was said to have accounted for 34% of this total "whereas in 2005 their share was approximately 28%."

Left behind: FDA warns doctors about device fragments

Speaking of medical error reporting, FDA recently published a "Dear Healthcare Practitioner" letter that addresses a category of events that would seem to be covered by the law of unintended consequences, urging surgeons to be more cautious in the use of devices during surgery and to be more conscientious in reporting any such events to the agency.

The letter says that unretrieved device fragments are the subjects of "nearly 1,000 adverse event reports each year" in connection with "more than 200 different medical devices and numerous medical specialties."

As examples of potential problems from unretrieved fragments, the letter cites the possibility that magnetic resonance imaging (MRI) fields "may cause metallic fragments to migrate" and the associated radio-frequency energy field "may cause [the fragments] to heat, causing internal tissue damage and/or burns."

Among the adverse events that FDA has seen reports for are local tissue reaction, perforation and blood vessel obstruction. Deaths have also been reported, although the agency offered no specific numbers. 

**Coming . . . in the March issue of
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**Complete coverage of the
Health Information Management
Systems Society Annual Conference**

Product briefs

'Blockbuster' demand predicted

2nd-generation DES era arrives with FDA Endeavor approval

Long-awaited, the next generation of drug-eluting stents (DES) made entry to the U.S. market in early February with FDA approval of the Endeavor DES from **Medtronic** (Minneapolis).

Similar to the roll-outs of the first DES devices in 2004 and 2005 – the Cypher from **Cordis** (Miami Lakes, Florida) and the Taxus from **Boston Scientific** (Natick, Massachusetts) – market uptake of the Endeavor will be closely watched, from two points of view: the Endeavor's ability to elbow aside the first-generation products and the ongoing trial and physician evaluation of the device.

The first two FDA-approved DES devices rushed to 80% of stent use, early on, and combined worldwide sales of about \$5 million. But the last two years have seen stagnating to declining use, based on a series of studies indicating safety problems and a general questioning of angioplasty/stenting for heart patients.

This opens the door wide for the Endeavor and the Xience V, made by **Abbott Laboratories** (Abbott Park, Illinois), expected to win the next DES approval, and the approval of these second-generation devices may be one reason why the DES market has fallen on hard times.

The Endeavor stent utilizes zotarolimus as the drug coating and the device/drug combination demonstrated good efficacy and safety in data presented to the FDA, and the cardiovascular device panel that recommended its approval last October.

An analysis of pooled safety data from the ENDEAVOR trial reported a thrombosis rate for Endeavor patients of less than 1% within the first year, and a 0.08% rate from one year to three years, post-implant. The same analysis revealed low cumulative rates of all safety measures out to three years of follow-up: stent thrombosis (0.7%); myocardial infarction (2.7%); and cardiac death (1%).

The company said that Endeavor "has shown numerically fewer adverse events across all key safety measures vs. a bare-metal stent. Of particular note from this analysis, just 3.5% of Endeavor patients experienced cardiac death or myocardial infarction

through three years of follow-up, compared to 6.6% of patients who were BMS-implanted."

ENDEAVOR IV, a randomized controlled trial comparing the Endeavor stent with the Taxus stent, met its primary endpoint, with a target vessel failure (TVF) rate in Endeavor patients of 6.6% at nine months. The TVF rate for Taxus patients at nine months was 7.2%.

Endeavor had similar efficacy compared to Taxus for all lesion subsets analyzed, and there were no statistically significant differences in target lesion revascularization (TLR), a clinical measure for repeat procedures.

Compared to a BMS in ENDEAVOR II, Endeavor had fewer repeat procedures by more than 61% at nine months. This treatment effect is sustained, with only 7.3% of Endeavor patients in this randomized controlled trial requiring a repeat procedure out to three years of follow-up.

With Endeavor approval, Medtronic is not wasting any time making the stent available to physicians. Scott Ward, president of Medtronic's CardioVascular business, told Biomedical Business & Technology that the company is initiating commercialization immediately. "We will be shipping about 100,000 units to U.S. hospitals in the next 30 days to assure full availability," Ward said.

He added that the company is anticipating "blockbuster demand" for the Endeavor stent, he added.

Ward said that Medtronic will conduct a 2,000-patient post-approval study in the U.S., combined with another trial outside the U.S. with 3,300 patients. In addition, he said, the company plans to collaborate with FDA to conduct a trial intended to identify the optimal duration of dual antiplatelet therapy following angioplasty and Endeavor DES placement.

Medtronic said in a statement that "Ultimately, the ENDEAVOR clinical program will enroll more than 22,500 patients followed to five years." It said that more than two-thirds of enrollees will be implanted with the Endeavor.

Elsewhere in the product pipeline:

- **Abbott** (Abbott Park, Illinois) said that it received FDA approval for its fully automated HTLV-I/HTLV-II blood screening test for use on the Abbott Prism instrument. The test is intended for use by laboratories to screen individual donations of blood and plasma for antibodies to human T — lymphotropic virus Type I and/or human T — lymphotropic virus Type II (anti-HTLV-I/HTLV-II). HTLV-I and HTLV-II are closely related but distinct retroviruses associated with several diseases including human T-cell leukemia and neurological disorders, according to the Centers for Disease Control. The Prism instrument consolidates testing into a single system automating many of the manual testing procedures and steps cur-

rently used to screen blood. Safety features built into the system help track and monitor each sample throughout the testing process providing documentation and quality control for testing facilities. The Prism system can run 160 samples per hour, making it possible to test more than 1,200 samples per eight-hour shift. Abbott Diagnostics makes *in vitro* diagnostics and offers a broad range of innovative instrument systems and tests for hospitals, reference labs, blood banks, physician offices and clinics.

- **Abiomed** (Danvers, Massachusetts) said that it has developed a new portable circulatory support driver for both in-hospital and out-of-hospital patients. The portable driver is designed to support Abiomed's AB5000 ventricular assist device. The combination of the new driver and the company's FDA-approved AB5000 VAD provides support of acute heart failure patients. The AB5000 can assume the pumping function of a patient's failing heart, allowing the heart to rest, heal and potentially recover. AB5000 is designed to provide either uni-ventricular or bi-ventricular support. Abiomed's portable driver is a bi-ventricular system that delivers the pressures and vacuums equivalent to Abiomed's AB5000 console and its iPulse console. Testing showed that the portable driver is capable of providing full support for a year's intended use. The unit is expected to require low maintenance, approximately every 5,000 hours of operation. Abiomed's AB5000 has FDA approvals for all acute heart failure indications.

- **ACR Image Metrix** (Philadelphia) will conduct a multi-reader clinical study to determine whether the addition of the iCAD CT Colon Computer-Aided Detection (CAD) system enables radiologists interpreting CT colonography images to detect more cancers than they would without using the iCAD system in the image interpretation process. ACR Image Metrix will work with iCAD to develop and execute a clinical study to support FDA approval of CT Colon CAD. CT colonography uses virtual reality technology to produce three-dimensional, "fly through" images that permit a thorough and minimally invasive evaluation of the entire colorectal structure for cancer and precancerous polyps. CAD computer software would then search the CT images obtained for abnormal areas of density or mass that may indicate the presence of cancer and precancerous polyps. The CAD system highlights these areas on the images, alerting the radiologist to the possible need for further analysis. ACR Image Metrix offers a complete menu of imaging CRO services, from study design to design of electronic data forms and image archiving, to image interpretation and quantitation. iCAD is a provider of Computer-Aided Detection (CAD) solutions that enable healthcare professionals to better serve patients by identifying pathologies and pinpointing cancer earlier.

- **Aethlon Medical** (San Diego) reported that researchers have demonstrated the effectiveness of the Aethlon Hemopurifier in capturing the highly-fatal H5N1 strain of the Avian Flu Virus (Bird Flu). In pre-clinical studies, high concentrations of H5N1 flu virus (~ 3 million flu virus/ml) were observed to be rapidly depleted from cell culture fluids when circulated through the Hemopurifier. The study data indicated that during a six-hour testing period, the Hemopurifier removed up to 99.4% of infectious H5N1 flu virus. Verification of viral capture was documented by both real-time PCR and conventional plaque assay (TCID 50) measurements. The recent discovery that H5N1 avian influenza virus can spread via the bloodstream to organs and other regions of the body typically not attacked by influenza viruses explains in part, the high virulence of H5N1 infection and why it remains a serious pandemic threat. Aethlon Medical makes therapeutic devices for infectious disease.

- **Alphatec Holdings** (Carlsbad, California) reported introduction of the Dynamo semi-rigid spinal system. Alphatec's complete solution combines the Dynamo semi-rigid rod with the rigid stabilization of Alphatec's Zodiac spinal fixation system to offer a new segmental solution for treating different stages of spinal degeneration at contiguous levels. The Dynamo provides surgeons with the flexibility to address varying degenerative indications and patient needs by matching the magnitude of stabilization needed for each of the multiple levels of spinal degeneration. Alphatec Holdings makes products for the surgical treatment of spinal disorders.

- **Amylin Pharmaceuticals** (San Diego) reported the availability of the SymlinPen 120 and the SymlinPen 60 pen-injector devices for administering Symlin (pramlintide acetate) injection. These new pre-filled pen-injector devices feature simple, fixed dosing to improve mealtime glucose control. SymlinPen 120 features fixed dosing to deliver 60 or 120 micrograms of Symlin per dose. SymlinPen 60 features fixed dosing to deliver 15, 30, 45, or 60 micrograms of Symlin per dose. Symlin is an injectable medicine used to control blood sugar after meals in adults with Type 1 or Type 2 diabetes who take mealtime insulin. Symlin is a synthetic analog of human amylin, a naturally occurring hormone that is made in the beta cells of the pancreas, the same cells that make insulin. In patients with Type 2 diabetes who use insulin, and in patients with Type 1 diabetes, those cells in the pancreas are either damaged or destroyed, resulting in reduced secretion of both insulin and amylin after meals.

- **AngioDynamics** (Queensbury, New York) said that it launched Centros, a self-centering, tunneled hemodialysis access catheter. The distal end of the catheter has a curved configuration; placed in the superior vena cava (SVC), its curved tips keep the

At press time

Valor wins European okay for trial of Neucrylate for cerebral aneurysms

A BB&T Staff Report

Valor Medical (San Diego), an early-stage medical device company that has developed an injectable device for the treatment of cerebral aneurysms, reported receiving approval for the first clinical trial in Europe has been received.

Clark Adams, CEO of Valor, called the approval "a major milestone" for the company. "We expect to be treating patients within the next 60 days and should have a second trial site approved at that time."

He said that Valor will submit an investigational device exemption application to the FDA "soon" to begin human trials.

Branded as Neucrylate, the product is a liquid that is injected into a cerebral aneurysm through a

micro-catheter placed from the femoral artery. When Neucrylate comes in contact with blood, the liquid changes into a solid material similar to a sponge. The surgical procedure for injecting Neucrylate will take less time, yet offers a more complete filling of the aneurysm as compared to coiling.

Dr. Charles Kerber, professor of neuroradiology, at the **University of California at San Diego** and founder of Valor, said, "Coiling has been a true advancement in the treatment of cerebral aneurysms. Neucrylate will advance the treatment even further by decreasing the surgical time and reducing the risks and failures associated with coiling."

Cerebral aneurysms are more common in people over 65, they may be found in as high as 5% of the population. Smoking and hypertension appear to markedly increase the chance that one will develop a cerebral aneurysm.

About 30,000 people in the U.S. are diagnosed each year with a cerebral aneurysm. However, Valor said that estimates indicate up to 4.5 million individuals in the U.S. that have "silent," that is, undiagnosed cerebral aneurysms.

ports of the catheter centered in the SVC, away from the vein walls. The tips of the catheter are not placed in the atrium, but in the lower third of the SVC. AngioDynamics makes medical devices used by interventional radiologists, nephrologists and surgeons for the minimally invasive treatment of cancer and peripheral vascular disease.

- **Aperio Technologies** (Vista, California) received FDA clearance to market the manual read of digital HER2 slides from a computer monitor using its patented ScanScope digital slide scanning system. The FDA-cleared system is intended for use as an accessory to the Dako HercepTest to aid pathologists in the detection and semi-quantitative measurement of HER2 protein expression to assess breast cancer patients for whom Herceptin treatment is being considered. The FDA clearance encompasses the company's complete digital pathology system, including ScanScope scanners for creating digital slide images from microscope slides, and the Spectrum digital pathology information management system for managing, viewing, and analyzing digital slides. Aperio makes digital pathology for the healthcare and life sciences industry.

- **Baxa** (Englewood, Colorado) reported the launch of the MedBoard web-based medication tracking system, designed to record pharmacy preparation and delivery activities. MedBoard helps health systems improve productivity through order prioritization and delivery assurance, reducing time spent fielding nursing calls and tracking order status. With the tracking system, pharmacies can manage work-

flows using barcode technology, and can provide tracking for doses that are not part of pharmacy ADCs. The system requires only a web browser and handheld scanners to get started. MedBoard uses technical, administrative and policy safeguards to ensure data security, and is HIPAA compliant. Baxa makes technologies for fluid handling and delivery.

- **Cardica** (Redwood City, California) reported the launch of its new C-Port xA X-Change Distal Anastomosis System, now commercially available in the U.S. The C-Port is a cartridge-based, reloadable C-Port system, which allows surgeons to attach multiple blood vessel grafts using the same handle during a coronary artery bypass graft (CABG) procedure. The C-Port accommodates cartridges pre-loaded with staples, allowing a surgeon to complete multiple anastomoses using the same CO₂-powered handle. Each device in the C-Port system product line is designed to enable automated, reliable and reproducible connections of blood vessels during cardiac bypass surgery. Unlike most hand-sewn anastomoses, Cardica's C-Port systems create compliant anastomoses that can expand and contract with blood flow. In addition, the C-Port anastomosis systems, whether used during on- or off-pump surgery, offer surgeons unique access to a wide range of coronary arteries, particularly small coronary arteries, which, in the past, have been difficult or impossible to connect effectively. Cardica makes automated anastomosis systems for CABG surgery.

- **CeloNova BioSciences** (Newnan, Georgia) reported results from the Atlanta study of the Catania

Coronary Stent System with NanoThin Polyzene-F at the 20th Annual International Symposium on Endovascular Therapy (ISET). Features of the Catania includes: early and complete vessel healing, as early as 30 days; patients can discontinue dual anti-platelet therapy after only one month; protection from stent thrombosis; and the Polyzene-F surface treatment is bacterial-resistant. CeloNova BioSciences specializes in products using their material, Polyzene-F.

- A simple test can accurately identify which newborn babies are at risk for developing dangerous levels of jaundice, according to researchers at **The Children's Hospital of Philadelphia** (Philadelphia). While neonatal jaundice, a yellowing of the skin caused by a buildup of a blood product called bilirubin, is common in newborns and usually disappears on its own, it can progress to brain damage in a small fraction of cases.

- **Coloplast** (Minneapolis) has expanded its new SenSura line, featuring the Circle of Security for those with an ostomy. The newest product, SenSura Click, is a two-piece pouching system that comes six months after the launch of the SenSura brand and its one-piece system. SenSura products feature Coloplast's Circle of Security – a new barrier technology that is the first to optimize five core needs: initial tack and adhesion, flexibility, absorption, erosion resistance and ease of removal. The SenSura Click two-piece pouching system uses the same barrier technology as the one-piece system with the addition of an easy-to-apply, click-lock security ring. Coloplast specializes in ostomy care.

- **CoolTouch** (Roseville, California) reported that the CoolLipo 1320 nm laser system received an additional 510(K) clearance from the FDA for laser lipolysis, or melting fat. The CoolLipo 1320 laser is designed to ablate fat in areas such as the neck, chin and arms and improves the outcome of conventional liposuction in larger areas such as the abdomen and thighs. In addition, the 1320 nm wavelength tightens the skin from the inside out by directly targeting collagen and connective tissue. CoolTouch makes medical lasers.

- **Covidien** (North Haven, Connecticut) reported the U.S. introduction of the AbsorbaTack 5 mm absorbable mesh fixation device for hernia repair. The AbsorbaTack 5mm absorbable tacks provide strong mesh attachment to the surrounding tissues, while reducing the amount of foreign material remaining in the patient long-term. Coupling the absorbable fixation of the AbsorbaTack with Covidien's Parietex mesh, a hydrophilic polyester mesh that establishes intimate tissue integration, offers an appropriate clinical solution. Covidien specializes in pharmaceutical products, imaging solutions, medical supplies, and retail products.

- **CryoCor** (San Diego), focused on the treatment

of cardiac arrhythmias, reported today the publication of a European study of atrial fibrillation (AF) patients treated with its Cardiac Cryoablation System to evaluate the role of atrial flutter in the recurrence of AF and the effectiveness of an ablation strategy focused on isolating the pulmonary veins to treat the AF. The study was published in the Dec. 11, 2007, issue of *Circulation*. The study prospectively evaluated the best catheter ablation strategy in patients with paroxysmal AF with and without concomitant right atrial flutter (AFL). During follow-up averaging 26 months, the authors found that electrical isolation of the pulmonary veins by catheter ablation was successful in patients without concomitant (AFL) at an 82% success rate. In patients with concomitant AFL, the combination of ablation for AFL and pulmonary vein isolation alone to treat AF was frequently insufficient in preventing recurrences of AF (recurrence rate of 67%). The authors concluded that those patients with AFL and AF may require additional sites of ablation to effectively treat their atrial fibrillation. Luz-Maria Rodriguez, MD, senior author of the study, said, "This is the first time that an ablation strategy for paroxysmal atrial fibrillation and atrial flutter has been systematically studied. This has implications for the tools that a clinician may use to treat these atrial arrhythmias. Based on this study, we do not believe that it will be sufficient to simply isolate the pulmonary veins in a significant proportion of patients."

- The FDA has approved a test that helps in assessing the risk of tumor recurrence and long-term survival for patients with relatively high-risk breast cancer, made by **Dako Denmark** (Glostrup, Denmark). Dako says that the TOP2A FISH pharmDx is the first approved device to test for the TOP2A (topoisomerase 2 alpha) gene in cancer patients. The product is The TOP2A gene plays a role in DNA replication. The TOP2A FISH pharmDx test uses fluorescently labeled DNA probes to detect or confirm gene or chromosome abnormalities, a technology known as fluorescent *in situ* hybridization (FISH). Changes in the TOP2A gene in breast cancer cells mean there is an increased likelihood that the tumor will recur or that long-term survival will be decreased. The test is suitable for breast cancer patients who are premenopausal or for whom tumor characteristics, such as tumor size or lymph node involvement, suggest a higher likelihood of tumor recurrence or decreased survival. The product was studied in Danish patients who were treated with chemotherapy after removal of a breast tumor. The test is conducted on a small piece of the removed tumor, with the tissue then stained with the FISH chemicals and studied under a microscope.

- **Echo Therapeutics** (Franklin, Massachusetts) reported launch of the second clinical study of its

Symphony continuous transdermal glucose monitoring system (CTGM System) at the **Tufts-New England Medical Center**. The company said it expects to report the results of the study this quarter. Echo's current generation Symphony CTGM system consists of the FDA-cleared SonoPrep skin permeation device that incorporates permeation control technology, together with wireless conductivity and proprietary transdermal sensor technologies. In addition to providing glucose monitoring benefits to diabetes patients, Symphony is designed to help patients and healthcare teams in hospital critical care settings to better control glucose levels with accurate, needle-free, continuous glucose readings. The skin permeation feature of Echo's current generation of Symphony CTGM System involves SonoPrep, Echo's FDA-cleared device using ultrasound-mediated skin poration technology. Echo Therapeutics is a platform-enabled specialty therapeutics and diagnostics company developing a broad pipeline of both advanced topical reformulations of FDA-approved products using its AzoneTS dermal penetration technology, and Symphony, a wireless, needle-free, CTGM system for the diabetes and hospital critical care markets.

- **EnteroMedics** (St. Paul, Minnesota) reported commencement of its EMPOWER clinical study. The FDA recently granted approval for the study of the company's investigational VBLOC therapy using the Maestro system, its initial product for the treatment of obesity. EMPOWER will evaluate the safety and effectiveness of the VBLOC vagal blocking therapy for the treatment of obesity at 15 clinical sites in the U.S. and Australia. VBLOC is delivered via the Maestro system through laparoscopically implanted leads to intermittently block the vagus nerves using high-frequency, low energy electrical impulses. VBLOC is designed to target the multiple digestive functions under control of the vagus nerves and to affect the perception of hunger and fullness. EnteroMedics makes medical devices using neuroblocking technology to treat obesity and other gastrointestinal disorders.

- **Escalon Medical** (Wayne, Pennsylvania) reported that its **Sonomed** subsidiary has received FDA clearance for the Master-VU ophthalmic B-scan ultrasound system. The system consists of a B-scan probe that can be interfaced to a standard personal computer (via a USB cable connection) using Sonomed's software, thereby converting the personal computer into an ophthalmic ultrasound system. The Master-VU features include: measurement calipers for multiple intraocular measurements; the ability to save both 30-second "clips" as well as individual frames on a scrolling frame manager; and on-screen annotation capability, including text and graphics. Sonomed is a diagnostic ultrasound company specializing in the design, manufacture and distribution of instruments for ophthalmology. Escalon makes ophthalmic diag-

nostic, surgical and pharmaceutical products as well as vascular access devices.

- **Ethicon** (Somerville, New Jersey) said the FDA has granted an expanded indication for Evicel Fibrin Sealant (Human). The company said the product is the first fibrin sealant to be indicated as an adjunct to hemostasis for use in patients undergoing surgery, when control of bleeding by standard surgical techniques is ineffective or impractical. Evicel is the only all-human plasma-derived fibrin sealant commercially available in the U.S. It does not contain aprotinin, which has been associated with adverse effects. Evicel is easy to use and readily available for time-sensitive needs in the operating room. The product is sold as a frozen liquid and requires less than one minute preparation time after thawing. Evicel is contraindicated in individuals known to have anaphylactic or severe systemic reaction to human blood products. Ethicon, a Johnson & Johnson company, makes surgical products for use in general surgery, wound management and women's health & urology.

- **Haemonetics Software Solutions** (Braintree, Massachusetts) reported FDA clearance for another software module in the Symphony blood bank management software suite. The Symphony 2.0 software will include a blood component manufacturing and distribution application, in addition to the blood donor management tools included in the previous software release. Symphony 2.0 software is a blood component manufacturing and distribution system which allows blood centers to automate many of the IT processes in their blood supply chain, from the point of blood donation to the point of distribution to the hospital. Specifically, the Symphony software suite includes an automated donor self-interview application and can manage all steps in the collection of blood through manufacturing, labeling and release, inventory management, order entry, and, finally, distribution to the hospital. Haemonetics Software makes blood management solutions.

- **Home Diagnostics** (Fort Lauderdale, Florida) reported its new blood glucose test strip platform called TRUEtest. TRUEtest strips will use no-coding technology that automatically calibrates with the company's upcoming TRUEresult and TRUE2go blood glucose meters. The TRUEresult meter will offer advanced performance features while TRUE2go will be the world's smallest monitor for on-the-go testing. The new no-coding technology of TRUEtest strips will eliminate the need for users to code their TRUEresult and TRUE2go meters with each new box of test strips. This enhancement reduces the risk of inaccurate glucose results caused by miscoding or failure to change the code when a new box of test strips is used, the company said. Home Diagnostics makes diabetes-testing supplies.

- **HP** (Palo Alto, California) has introduced an

archiving platform to help healthcare providers, hospitals and imaging clinics meet rapidly expanding retention requirements for medical images. With the HP medical archive solution (MAS) 3.0, healthcare providers can strengthen their focus on improving patient care while also adhering to strict compliance regulations by ensuring that medical image data is securely indexed, preserved and accessible, HP said. HP MAS 3.0 delivers HP ProLiant servers, HP StorageWorks SAN and MSA disk storage with indexing, policy management and search software to provide long-term retention of medical fixed content. The tiered storage of the MAS grid is designed to help healthcare providers align the business value of images with retention policies.

- **Innocoll** (Ashburn, Virginia) said that the first of two Phase III clinical trials sponsored by its wholly owned subsidiary, **Innocoll Technologies**, to investigate CollaRx Gentamicin Surgical Implant for the prevention of surgical site infections, has commenced dosing. The implant is a biodegradable, leave-behind surgical implant impregnated with the broad spectrum aminoglycoside antibiotic, gentamicin. It is designed to provide a high concentration of gentamicin (which has a concentration-dependent mechanism of action) directly to the target tissue for localized action, while maintaining low systemic levels well below the toxicity threshold. The product was developed using Innocoll's proprietary collagen-based drug delivery technology, CollaRx, and (outside of the US) is indicated as an adjunct to systemic antibiotic therapy for the treatment of localized, deep tissue infections and the prevention of surgical site infections in both hard and soft tissues. The cardiac surgery trial will enroll diabetic and/or obese (BMI>30) patients known to be at a higher risk of sternal wound infections, a serious and potentially life-threatening complication of cardiac surgery.

- **InnoMed Technologies** (Coconut Creek, Florida) said it is developing products designed specifically to assist Asian sufferers of apnea. InnoMed's Nasal-Aire II Petite is a sleep interface that can accommodate the smaller nasal passages characteristic of traditional Asian features. "Since no facial features are the same," the company says, the interface delivers air directly to the nose via a nasal cannula that comes in various sizes. The Nasal-Aire also comes with ergonomically designed Micro Headgear, featuring an elbow feature that reduces facial pressure points for added comfort.

- **Isolagen** (Exton, Pennsylvania) said that injections have been completed in the Phase III multi-center, double-blind, randomized, placebo-controlled clinical trials evaluating the Isolagen Therapy for the treatment of nasolabial folds, or wrinkles. Subjects have advanced to the follow-up period of the study. Isolagen also reported the completion of injections in

the Phase II open label study designed to gather further safety and potential application information on the use of the Isolagen Therapy for the full face. The subjects in this study also have advanced to the follow-up period, it said. Isolagen is an aesthetic and therapeutic company.

- **Labcyte** (Sunnyvale, California) introduced a new member of its acoustic dispensing family, the Echo 520 liquid handler, developed for the medium-throughput laboratory. The 520 system provides precision transfers of solutions for the laboratory that needs to transfer as many as 100,000 solutions per day. The Echo 520 avoids loss of sample by adsorption onto tips and intermediate plates and uses the same acoustic droplet ejection (ADE) technology that has enabled pharmaceutical companies to reduce the volume of their assays while obtaining more reliable data, Labcyte said. The acoustic droplet ejection technology applications include compound management, assays, arraying, particle manufacturing, imaging mass spectrometry and live-cell transfer.

- **Malcom** (Tiverton, Rhode Island) introduced what it said is a new method for non-contact removal of microscopic flash from molded, cut, and skived medical parts such as catheters and personal care applicators. Malcom's Leister LE-Mini Heater produces up to 1380°F and 0.35 to 1.06 CFM to remove microscopic hair-like flash from injection molded, cut, and skived parts instantly without open flames. This compact heater can be supplied with a variety of nozzles to match the application and only requires 120/230 V single-phase and 30 psi air. Malcom's Leister LE-Mini Heater can be controlled via PLC and standard temperature controllers. Measuring only 1" in diameter x 10" in length, it offers integrated tool and heating element protection for long life and is available with optional built-in thermocouples. Malcom is a licensed Leister technologies distributor.

- **Medtronic** (Minneapolis) reported the U.S. launch of the AneuRx AAAdvantage stent graft on the new Xcelerant hydro delivery system, which features a hydrophilic coating designed to aid navigation of the device through tight and tortuous arteries by reducing friction with the artery wall. In addition, Medtronic received FDA approval to introduce its latest generation of packaging materials for the launch of this product. The Xcelerant system will be used with the AneuRx AAAdvantage stent graft. The Xcelerant features an integrated sheath that is tapered on both ends. This dual-taper sheath is designed to facilitate insertion and retraction of the delivery catheter by minimizing the time that the surface area of the sheath is in contact with the artery wall. The integrated sheath also contributes to the system's low profile characteristics, intended to enable excellent tracking and access through small vessels.

- **Millennium Dental Technologies** (Cerritos,

California) reported the results of a peer-reviewed manuscript, published in *The International Journal of Periodontics & Restorative Dentistry*, demonstrating uniform histologic success in the treatment of moderate to severe gum disease using the Laser Assisted New Attachment Procedure (LANAP). Millennium Dental estimates that LANAP-licensed practitioners are treating over 14,000 patients nationwide annually. New connective tissue attachment and regeneration of root surface (cementum) was achieved in 100% of the cases in the human histology study using the PeriO-Lase MVP-7 variable pulsed Neodymium: Yttrium-Aluminum-Garnet dental laser, designed especially for LANAP. Study results show the FDA-approved LANAP is now a legitimate treatment alternative to conventional scalpel/suture flaps surgery, Millennium said.

• **Millipore** (Billerica, Massachusetts) and **Gen-Probe** (San Diego) reported the launch of the first product from their collaboration to create faster, more robust tests for detecting contaminants in pharma and biotech manufacturing processes. The method combines Millipore's sample prep methodologies with Gen-Probe's nucleic acid technologies to deliver both speed and sensitivity in one microbial screening tool. The MilliProbe system uses real-time transcription-mediated amplification technology to detect targeted microbial contamination within hours compared to the days or weeks usually required to generate results using traditional culture-based technology. Faster detection allows biopharmaceutical manufacturers to take corrective action earlier in the production process, which reduces downstream processing risks, optimizes product yields, and improves final product quality. Millipore provides bioscience research and biopharmaceutical manufacturing. Gen-Probe makes nucleic acid tests.

• A new creatinine monitoring system from **Nova Biomedical** (Waltham, Massachusetts) enables simple, rapid, and accurate assessment of renal function by finger prick capillary blood sampling at the point of care, according to the company. Incorporating new patented, Multi-Well test strip technology adapted from Nova's hospital glucose monitoring system, Nova StatSensor Creatinine allows creatinine to be measured with a simple 30 second test in the emergency department, radiology, oncology, or other point-of-care areas where renal function must be assessed. StatSensor Creatinine measures creatinine and calculates estimated glomerular filtration rate (eGFR) by MDRD or Cockcroft-Gault equations. Creatinine with eGFR is a more accurate and sensitive measurement of kidney function than creatinine alone. StatSensor Creatinine interfaces with hospital and laboratory information systems. Nova makes blood gas/electrolyte analyzers in hospitals and chemistry analyzers for cell culture and fermentation

in biotechnology.

• **Ocean Optics** (Dunedin, Florida) introduced the RedEye Oxygen Patch which uses a combination of sensing material and optical sensing technologies. The RedEye self-adhesive, non-invasive patch enables quick readings of the presence or absence of oxygen and provides quantitative measurements. The patch can be integrated into the surface of sample containers such as blood bags, pill blister packs, or point of care analysis devices like disposable ventilator oxygen attachments, to permit non-invasive, through-the-package oxygen concentration measurements. RedEye coatings are capable of monitoring low levels of oxygen in gas and dissolved oxygen in liquids, as well as the higher oxygen levels present in cell culture and respiratory monitoring. Ocean Optics makes miniature photonics.

• **Olympus America** (Center Valley, Pennsylvania) said that the FDA has cleared the Olympus PK7300 automated microplate system for use in the U.S. The FDA has also licensed blood grouping and phenotyping reagents specifically formulated and manufactured exclusively for use on the PK7300 instrument. Designed for blood donor centers, the system will offer the performance that has made Olympus the leader in the field. Olympus systems test more than 90% of the North American blood supply. The newest member of the PK7000 series utilizes the same proven technology, agglutination in the Olympus microtiter plates, as its predecessors – the Olympus PK7100 and PK7200 systems. The PK7300 system will also offer users enhanced process control features, increased throughput, upgraded computer hardware and software, and reduced maintenance. Olympus makes high-throughput automated blood bank instruments.

• The FDA approved expansion of the indications for a liquid fibrin sealant to help control bleeding during general surgery. The sealant, called Evicel, made by **Omrix Biopharmaceuticals** (Kiryat, Israel), is sprayed or dripped on small, oozing blood vessels to form a covering that helps stop bleeding. Evicel was previously approved for use during liver and vascular surgery. This approval expands Evicel's indication to include general surgery applications. Evicel contains fibrinogen and thrombin, two proteins involved in the production of fibrin. Fibrinogen and thrombin are found in human plasma, the liquid portion of blood. The plasma used to manufacture the product is collected from donors who have been screened and tested for blood-transmitted infections. Omrix is an international bioscience company specializing in innovative, life-saving products.

• **Orthovita** (Malvern, Pennsylvania) said it has made a 510(k) filing to the FDA for the use of its Cortoss bone augmentation material in vertebral augmentation, based on data from three U.S. clinical

investigations conducted under FDA investigational device exemptions and several European studies and intended to demonstrate that the performance of Cortoss is substantially equivalent to polymethylmethacrylate (PMMA) bone cement. The clinical study of CORTOSS demonstrates that the same degree of clinical improvement in pain and function is achieved with approximately 40% less material than PMMA when augmenting the vertebral body, Orthovita said. The Cortoss filing includes data on 469 vertebral compression fracture patients treated with Cortoss and 94 patients treated with PMMA with follow up ranging from 11 months to over 3 years.

- **Respironics** (Murrysville, Pennsylvania) reported the release of the OmniLab™ multi-mode titration system. The device is intended to help sleep technicians titrate more types of patients than ever before. The device incorporates six modes of therapy, with multiple technologies which can be accessed directly from a PC. The company said that sleep technicians can choose the most effective therapy for each patient from one system. Patients can be titrated without interruption as they won't need to move to another room in order to be titrated on a different system. Many therapy modes, some incorporating Respironics patented comfort technologies are available to permit titration of almost any patient type, including pediatric patients (age 7 and older, and greater than 40 pounds, in CPAP, BiPAP S, BiPAP S/T, T and PC modes). The PC Direct software package makes changing patient mode settings and pressures quick and easy. A technician can simply adjust patient parameters directly from the computer monitor. The last patient pressure settings can be printed directly to a prescription sheet. Kevin Dorcak, product marketing manager of Respironics, said, "The OmniLab contains two of our most advanced technologies, BiPAP autoSV® for patients with various forms of Central Apneas (such as Complex and Mixed Apneas and Cheynes-Stokes Respiration) and BiPAP AVAPS for patients with underlying, progressive respiratory conditions that require frequent changes over time, such as restrictive thoracic, neuromuscular and obesity hypoventilation disorders." Respironics is a manufacturer and distributor of products and programs that serve the global sleep and respiratory markets.

- **RSB Spine** (Cleveland) reported the first implantation of its InterPlate L in the lumbar spine. RSB Spine also has completed the national rollout of its InterPlate C device for use in the cervical spine. The company also expects to introduce two new InterPlate products manufactured from a radiolucent polymer (PEEK, polyetheretherketone) later this year. Fusion is one of the most common spinal procedures performed by neurosurgeons and orthopedic spine surgeons. The InterPlate C and InterPlate L are

designed to facilitate rapid fusion and are used in conjunction with graft material to fuse spinal vertebrae. RSB Spine is a privately held medical device company focused on making innovative spinal implants.

- **Sangart** (San Diego) said that it has started testing its lead product, Hemospan, in a Phase II clinical study involving chronic critical limb ischemia (CCLI) patients. The study is designed to evaluate the safety and efficacy of Hemospan in patients suffering from CCLI, a debilitating condition that results from severely limited blood circulation to the legs. The primary endpoint is tissue oxygenation measured non-invasively. Hemospan is a hemoglobin-based oxygen transport agent designed to serve as an oxygen therapeutic and as an alternative to blood transfusions. A key property of Hemospan is its high oxygen affinity which results in targeted oxygen delivery to tissues at risk of oxygen deprivation. Sangart makes oxygen transport agents.

- **Smiths Medical** (St. Paul, Minnesota), part of the global technology business **Smiths Group**, said it has received FDA clearance for its P.A.S. Port T2 Power P.A.C. and Port-a-Cath II Power P.A.C. dual-lumen implantable access systems. The new products expand the existing port line from seven to 10 systems available for power injections of contrast media. Implantable access systems provide a route of delivery for patients requiring long-term medications such as chemotherapy. The portal is implanted under the skin, usually in the chest, and connected to a catheter which threads into a vein. Power-injecting is performed when a patient requires a contrast enhanced computed tomography scan for diagnostic reasons. The power injection procedure requires a higher pressure and flow rate than standard medication infusions so an additional IV line traditionally had to be placed in the patient.

- **SpineVision** (San Francisco) said that preliminary data from an ongoing postmarketing study show that its FDA-cleared PediGuard device allows a two-fold reduction of the risk of inadvertent pedicle screw misplacement during lumbar degenerative spine surgery. In addition, the preliminary results show that the use of PediGuard leads to a six-fold reduction of medial breaches, and suggest an approximately 10% decrease in average screw-placement time, as well as a reduction of surgeons exposure to radiation by about 30%. According to the company, PediGuard is the first wireless, hand-held instrument capable of accurately detecting changes in tissue type, thus alerting surgeons to potential pedicular or vertebral breaches during pedicle screw site preparation. SpineVision makes motion preservation and fusion devices for spine specialists.

- The first fully automated ablation system supporting an open-loop irrigated catheter using remote

navigation with the Niobe magnetic navigation system, designed by **Stereotaxis** (St. Louis) and the Carto RMT system by **Biosense Webster** (Diamond Bar, California), has received FDA approval. The system uses the Navistar RMT Thermocool Irrigated Tip Catheter and the Coolflow Pump from Biosense Webster, with the Stockert RF Generator. The catheter incorporates small irrigation holes at the tip to provide cooling during RF ablation. The addition of the Niobe magnetic system and the Carto RMT system provides electrophysiologists with accurate 3-D mapping, targeting and remote navigation the companies said. Biosense Webster, a Johnson & Johnson company, makes diagnostic navigation and mapping tools. Stereotaxis makes cardiology instrument control system for use in a hospital's interventional surgical suite.

- **St. Jude Medical** (St. Paul, Minnesota) reported FDA clearance for its EnSite Fusion Registration Module, new software to help physicians create detailed heart models to facilitate the diagnosis and delivery of therapy for complex abnormal atrial heart rhythms, including atrial fibrillation. EnSite Fusion software registers, or integrates, an EnSite System-created chamber model with a three-dimensional computed tomography (CT) model so that the physician has an improved view of the heart's anatomy to better guide

the delivery of therapy. EnSite Fusion has the capability for "dynamic registration," which allows for adjustments fusing the EnSite System-created and CT-derived models, giving physicians a more detailed image of the heart. Dynamic registration allows physicians to adjust the EnSite System-created model at key anatomic locations to more precisely adapt to the 3-D, CT model.

- **Third Wave Technologies** (Madison, Wisconsin) said that the company has achieved the subject enrollment goals for its HPV-products clinical trial. The total enrollment target was comprised of 2,000 normal subjects and 1,400 women with atypical, or ASCUS, Pap test results. The next steps in the clinical trial include obtaining the final colposcopy and biopsy data, validating and locking down the database, opening the database, and completing and submitting the FDA PMA applications. Third Wave makes molecular diagnostic reagents for a variety of DNA and RNA analysis applications to meet the needs of our customers.

- **Three Palm Software** (Los Gatos, California) reported receiving FDA clearance for its WorkstationOne Breast Imaging Workstation. WorkstationOne is intended for softcopy reading and interpretation of digital mammography images, and was developed with the goal of assisting radiologists to

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read digital mammograms efficiently. WorkstationOne incorporates viewing methodology, including Tabar's systematic viewing technique for searching for subtle abnormalities on the mammograms. The workstation, supporting IHE integration profiles and the display of CAD markers, is a software system that can be installed on an off-the-shelf general purpose computer with one or two gray scale high resolution monitors and one color monitor. Three Palm Software specializes in development of medical imaging software.

- **ThromboVision** (Houston) said that it has initiated clinical trials of its ThromboGuide (T-Guide) platelet function monitor. The T-Guide consists of a disposable test kit and a point-of-care base unit. The system will help physicians improve their cardiac patients' lives by individualizing antiplatelet therapy that they use to prevent heart attacks, strokes and stent occlusions. ThromboVision has licensed the patented technology developed by scientists affiliated with the Utah Artificial Heart Institute, Brigham Young University and the University of Utah. ThromboVision develops biomedical diagnostics.

- **Varian Medical Systems** (Palo Alto, California) reported launch of a family of Pursuit columns for high performance liquid chromatography with Pursuit XRs Ultra 2.8 and Pursuit UPS 2.4. These new columns allow chromatographers to analyze samples faster while achieving higher resolution and reducing the cost per analysis, the company said. Both columns are intended for use by analytical chemists in pharmaceutical and environmental laboratories for the separation, identification and quantification of sample components.

Varian also reported FDA clearances for its RapidArc radiotherapy technology, making it possible to deliver image-guided, intensity-modulated radiation therapy (IMRT) two to eight times faster and more precisely than possible with conventional IMRT or helical tomotherapy. RapidArc delivers a complete IMRT treatment in a single rotation of the treatment machine around the patient. The two FDA clearances for RapidArc cover the treatment hardware and the RapidArc treatment planning software module in Varian's Eclipse treatment planning system. RapidArc technology uses an algorithm that creates a finely-shaped IMRT dose distribution that matches the size and shape of the tumor and varies three parameters simultaneously: speed of rotation, dimensions of beam-shaping aperture, and dose rate. Varian makes systems for treating cancer and other medical conditions with radiotherapy, radiosurgery, proton therapy and brachytherapy.

- **VGX Pharmaceuticals** (Blue Bell, Pennsylvania) reported completing its first study to assess the tolerability of VGX's Celectra electroporation device in humans. Ten healthy adult volunteers were treated with Celectra device and were asked to report the level of discomfort they experienced immediately after electroporation and at various times thereafter. The procedure was generally well tolerated. On average, the patients reported a moderate level of discomfort during the procedure. However, the discomfort was short-lived, with comfort levels approaching baseline levels within 30 minutes following the procedure. Other complaints were mild and did not require any treatment. VGX manufactures DNA plasmid-based vaccines and therapies. 

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