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Orthopedic Power Rankings

Robin Young's Entirely Subjective Ordering of Public Orthopedic Companies

This Week: Alphatec's stock has been one hot performer. Normally companies with losses don't make the Power Rankins. But Wall Street sees a bargain. Certainly CEO Kuyper's focus on elderly spine patients (fastest growing sector) and new products is compelling. ATEC's Low PSR + expected 26% sales growth (Wall Street consensus) = #7 on the Power Rankings.

Rank	Last Week	Company	TTM Op Margin	30-Day Price Change	Comment
1	1	Integra LifeSciences	12.35%	4.37%	Even I'm getting tired of IART at #1. But no other company has IART's combination of quality, valuation and growth.
2	2	Stryker	23.18	0.95	Brigham & Women's study says TKR is cost effective. This reinforces SYK's bread & butter in challenging times.
3	4	ArthroCare	16.87	12.15	Since March, ARTC has risen from $3 to $12. ARTC's $319 million market value is still around 1.3x theoretical sales.
4	6	CONMED	9.80	6.30	Everyone is looking past this quarter and the next one as well. Ugly sales and earnings comparisons. Nowhere to go but up.
5	8	Medtronic	31.68	5.93	It's been a clean sweep in Memphis. New people everywhere. Fresh eyes and ears. Perhaps fresh insights as well?
6	9	Exactech	13.42	(0.87)	Fourth most attractive PE-to-Growth rate in all of orthopedics. Even with reduced outlook, still expecting higher sales and earnings.
7	NR	Alphatec	(11.34)	19.40	Recently raised $10 million in a private placement. But, and here's the key, surgeons talking up ATEC's products.
8	3	Symmetry	11.05	1.43	SMA has been on a great run. But down revenues vs. last year may temper investor interest near term.
9	10	Johnson & Johnson	25.36	7.30	DePuy's 6% sales growth before currency changes was decent. Not as good as JNJ's Ethicon or Ortho Diagnostics, but decent.
10	5	Orthofix	8.14	(14.27)	The market is showing no confidence in management. We disagree but fighting the tape is like catching a falling knife.

Robin Young's Orthopedic Universe

Top Performers Last 30 Days

	Company	Symbol	Price	Mkt Cap	30-Day Chg
1	Osteotech	OSTE	$4.62	$83	24.9%
2	Alphatec Holdings	ATEC	$3.57	$170	19.4%
3	ArthroCare	ARTC	$12.00	$320	12.1%
4	Regen Biologics	RGBO.OB	$2.25	$22	8.2%
5	Johnson & Johnson	JNJ	$59.23	163,210	7.3%
6	Orthovita	VITA	$5.69	$433	6.6%
7	CONMED	CNMD	$17.04	$495	6.3%
8	Medtronic	MDT	$34.67	$38,570	5.9%
9	***Average***			***$9,662***	***5.7%***
10	TiGenix	TIG.BR	$6.37	$155	4.7%

Worst Performers Last 30 Days

	Company	Symbol	Price	Mkt Cap	30-Day Chg
1	Capstone Therapeutics	CAPS	$0.57	$23	-27.4%
2	Orthofix	OFIX	$22.70	$388	-14.3%
3	Wright Medical	WMGI	$13.97	$531	-11.8%
4	TranS1	TSON	$6.38	$131	-10.9%
5	CryoLife	CRY	$5.32	$150	-8.1%
6	NuVasive	NUVA	$40.01	$1,460	-4.9%
7	RTI Biologics Inc	RTIX	$4.25	$230	-2.5%
8	Smith & Nephew	SNN	$37.19	$6,570	-1.0%
9	Exactech	EXAC	$14.73	$188	-0.9%
10	Stryker	SYK	$39.37	$15,640	0.9%

Lowest Price / Earnings Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	P/E
1	ArthroCare	ARTC	$12.00	$320	7.05
2	Symmetry Medical	SMA	$8.54	$306	7.41
3	Zimmer Holdings	ZMH	$41.57	$8,940	10.20
4	Orthofix	OFIX	$22.70	$388	11.18
5	Medtronic	MDT	$34.67	$38,570	11.82

Highest Price / Earnings Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	P/E
1	Osteotech	OSTE	$4.62	$83	149.33
2	I Flow Corp	IFLO	$6.95	$170	72.19
3	Smith & Nephew	SNN	$37.19	$6,570	66.49
4	NuVasive	NUVA	$40.01	$1,460	46.02
5	RTI Biologics Inc	RTIX	$4.25	$230	36.48

Lowest P/E to Growth Ratio (Earnings Estimates)

	Company	Symbol	Price	Mkt Cap	PEG
1	ArthroCare	ARTC	$12.00	$320	0.28
2	Symmetry Medical	SMA	$8.54	$306	0.77
3	Integra LifeSciences	IART	$27.44	$779	0.83
4	Exactech	EXAC	$14.73	$188	0.89
5	CryoLife	CRY	$5.32	$150	0.90

Highest P/E to Growth Ratio (Earnings Estimates)

	Company	Symbol	Price	Mkt Cap	PEG
1	NuVasive	NUVA	$40.01	$1,460	9.32
2	RTI Biologics Inc	RTIX	$4.25	$230	1.92
3	Johnson & Johnson	JNJ	$59.23	$163,210	1.63
4	CONMED	CNMD	$17.04	$495	1.51
5	***Average***			***$9,662***	***1.50***

Lowest Price to Sales Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	PSR
1	CONMED	CNMD	$17.04	$495	0.69
2	Symmetry Medical	SMA	$8.54	$306	0.75
3	Orthofix	OFIX	$22.70	$388	0.78
4	Osteotech	OSTE	$4.62	$83	0.86
5	ArthroCare	ARTC	$12.00	$320	0.95

Highest Price to Sales Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	PSR
1	TiGenix	TIG.BR	$6.37	$155	352.01
2	Mako Surgical	MAKO	$8.91	$223	36.29
3	Regen Biologics	RGBO.OB	$2.25	$22	14.72
4	NuVasive	NUVA	$40.01	$1,460	5.34
5	Orthovita	VITA	$5.69	$433	5.28

Christie Diverted Ortho $ to Cronies

By Walter Eisner

Christie and Ashcroft

Zimmer said it was "shocked" by John Ashcroft's $52 million proposed fee agreement to act as a monitor following the deferred prosecution agreements.

In response, former prosecutor Christie said "serious revelations" about Zimmer brought to his attention by the monitor's team needed to be resolved in short order.

An attorney for Stryker told the prosecutor that his client felt the "industry was broken, was part of the problem, and offered to help fix it."

Members of that lawyers' law firm later made campaign contributions to Christie's campaign.

Those are just some of the revelations surfacing as the governor's race in New Jersey sheds light on the settlements with hip and knee makers and the subsequent multimillion-dollar no-bid monitoring contracts awarded by the prosecutor to former colleagues.

Christie for Governor

Christopher Christie, the former U.S. Attorney, jolted the world of orthopedics in 2005 when he threatened to prosecute five hip and knee manufacturers and physicians for kickbacks and sham consulting agreements. He's now running for governor of New Jersey.

The prosecutor leveled serious criminal charges against physicians and companies (Biomet, Zimmer, Smith & Nephew, DePuy and Stryker). However, a settlement between the government and the device companies resulted in moderate fines, temporary federal monitoring, permanent disclosure of physician consulting agreements, and promises to behave in the future. Industry and surgeon relationships were disrupted, resulting in a dramatic decline of payments to physicians. Some companies, like Zimmer, appear to have lost market share as a result of that disruption.

Two things that the settlements did not do were to make public the evidence that Christie claimed he had against physicians and companies, nor did anyone accused by the prosecutor have to admit to any wrongdoing.

Prosecutor Testifies

Now that Christie, a Republican, is running for governor and has to explain the huge $52 million no-bid contract, among others, awarded to his former boss John Ashcroft to

monitor the device companies, he's talking about the investigation and monitoring contracts.

At the urging of Democratic congressmen from New Jersey, the U.S. House of Representatives has held hearings about the propriety of the government's use of deferred prosecution agreements (DPAs) in general and Christie's use of them while he was the U.S. Attorney in New Jersey.

During a hearing before Congress on June 25, Christie gave his most extensive account to date of the settlement with the device companies.

Punishment Without Collateral Damage

Christie told a House committee that the Department of Justice (DOJ) was looking for a way to punish corporate wrongdoing, short of an indictment, that would bring real cultural change to the offending corporation but not result in the loss of thousands of jobs and billions in shareholder value.

Christie Testifies at Congress • Photo: NJ.com

He cited the example of the federal indictment of Arthur Andersen during the Enron scandal. He said that indictment put Arthur Andersen out of business and nearly 75,000 innocent people lost their jobs and equity in the firm. While initially convicted, Arthur Andersen prevailed on appeal to the U.S. Supreme Court. But the damage had been done.

Christie told Congress that when he opened his investigation of the hip and knee makers, there were allegations that the companies were violating the federal anti-kickback statute, the Stark Act and other criminal laws by paying orthopedic surgeons kickbacks disguised as consulting fees in order to obtain the exclusive use of their products.

Over the course of the next two and a half years, said Christie, a massive investigation was undertaken of all five companies. In May 2007, he opened negotiations with all five companies regarding resolution of these matters by way of DPAs or NPAs (nonprosecution agreements).

By this time, said Christie, Stryker was cooperating with the DOJ in the investigation into the four other companies. He said the remaining four companies vigorously contested the allegations being made by the DOJ.

"The companies employ 47,000 people in the United States and accounted for nearly the entire production market in these vital medical products. If the [U.S. Attorney's] Office sought an indictment from a federal grand jury which was ultimately returned and announced, it is certain that these companies would have been suspended and debarred from the Medicare programs. That exclusion would have certainly caused each of the five companies to go out of business with the resulting loss of 47,000 American jobs and cutting-edge devices which improve the lives of millions of Americans," said Christie.

Given those circumstances, Christie said his office wanted to reach an agreement with the companies that sufficiently punished them for their "bad acts, mandated changes in corporate culture, and did not result in collateral damage to innocent parties."

All the companies insisted that they would only agree to DPAs if all five companies had to operate under the same rules moving forward.

Negotiating Monitoring Agreements

Negotiating these agreements was akin to landing five airplanes on the same runway at the same time, noted Christie. On September 27, 2007, the four "non-cooperating" companies executed DPAs and Stryker executed an NPA with the DOJ.

One of the elements of the DPAs was the hiring of DPA monitors agreeable to the U.S. Attorney's Office and the companies to ensure that all the companies were complying with the same rules.

Christie said that two weeks before the execution of the agreements, his office began discussions with the companies on monitor identification

and recommendation. Christie wanted monitors who had experience with corporate fraud and monitors with whom his office had worked before. He came up with a list of names to recommend to each company. He said he made it clear to the companies that they were to interview the recommended monitor prior to execution of the DPAs. He said it was also made clear that if the companies had serious objection to their proposed monitor after the interview process, they could raise that objection with his office and a new monitor would be recommended.

All five companies accepted the proposed monitors, said Christie, and it was then left to the companies and the monitors to negotiate a fee structure. He said his office would only intervene if the company and the monitor were at a genuine impasse in fee negotiations, and no such impasse occurred, said Christie.

That assertion would later be challenged by one of the New Jersey congressmen who cited leaked emails involving Zimmer lawyers. More on that below.

Settlement Results

Christie noted during the hearing that the results of the DPAs on the device industry have been "truly extraordinary."

Christie says nearly half a billion dollars have been restored to the public through the $311 million fine and more than $150 million in reduced payments to physicians. He says the physician payments would have been passed on to consumers. He noted that the total number of physicians receiving payments dropped by more than 1,000. We've previously reported that, in effect, the physicians have paid the device company's fines.

Christie said that the DPAs reformed a "previously corrupt corporate culture" and that the companies, "after initially reluctantly admitting their conduct, have come full circle in their appreciation of the results."

These accomplishments, said Christie, are in addition to the fact that there was no loss of products critical to the health of senior citizens in the United States and globally. "Also, no harm was done to the shareholders in this $80 billion industry."

"An Offer They Couldn't Refuse"

After Christie's testimony, Rep. Steve Cohen (D-Tenn.) asked Christie if Zimmer had turned down Christie's recommendation of Ashcroft as a monitor.

"No, in fact sir, the complete answer to that…," Christie began.

"That's the complete answer to that," Cohen interrupted.

"No, no it's not, sir, it really isn't," replied Christie.

Christie said Zimmer wanted to avoid a "big New York law firm" and that Ashcroft, from Missouri, offered the "Midwestern sensibilities" the company was seeking.

Cohen pushed on.

"You made an offer they couldn't refuse," Cohen said.

Christie objected, and they began to talk over each other until Cohen said loudly: "I've got the microphone." "Sir, you said that I made them an offer they couldn't refuse," Christie said, earning a "That's right" from Cohen.

"First of all, it's an ethnically insensitive comment by you, first of all, to an Italian-American and secondly…"

Cohen interjected, "I had no idea you were Italian-American…"

Christie again cut him off. "And secondly, sir, you were not in the room

when those negotiations took place, sir," Christie said. "I was."

Then Christie abruptly walked out to catch a train, over the protests of Cohen.

Democrats Pounce

Following the hearing, the Democratic National Committee issued a statement saying, "Chris Christie's testimony to Congress leaves too many unanswered questions about tens of millions of dollars in no-bid contracts that appear to have gone to friends and political cronies like John Ashcroft." It's clear that as U.S. Attorney Christie used his position to help his friends, and now those very friends are helping him fill his campaign coffers."

New Jersey Congressman Frank Pallone wrote Christie a day after his testimony and offered the former prosecutor a chance to clarify "a series of discrepancies and apparent contradiction" between his testimony and documents that came to light 30 minutes before the hearing.

Zimmer "Shocked"

Specifically, Pallone noted Christie's statement that the companies did not object to the monitors' compensation. Pallone wrote, "Frederick Robinson, the attorney for Zimmer Holdings, had emailed your First Assistant U.S. Attorney, Michelle Brown, to say the company and its lawyers were 'shocked' by Ashcroft's 'proposed fee agreement.' Further, in your prepared statement to the committee you said there was no 'impasse' over fees awarded to federal monitors and those companies granted DPAs."

Pallone said that an email sent by Robinson to the prosecutor's office on October 17, 2007, stated:

"Chris, as you know, Zimmer has been in discussion with the Ashcroft Consulting Group ("ACG") regarding certain provisions of the Monitor Agreement, most of which concern the financial arrangements between the parties. Although everyone has approached these negotiations in the utmost good faith, it appears that the parties have reached an impasse on certain key issues."

According to Pallone, Christie responded two days later with this email:

"…I am telling you that I expect your client to return to this issue directly with the Monitor with an eye towards resolving this issue yourselves in short order. We have a great deal of work to do at Zimmer. I fear the serious revelations brought to my attention yesterday by the Monitor's team are just an example of the significant issues that Zimmer and the Monitor are going to need to address and resolve together in short order. We cannot afford to be distracted by anything other than bringing Zimmer into compliance with the DPA and federal law. Take another stab at resolving the substantive issues raised in your email directly with the Monitor."

More Monitoring Agreements

According to a June 25 AP story, in addition to the monitoring agreement granted to Ashcroft, other monitoring agreements making their way into the governor's race included:

> David Kelley. A former U.S. attorney in Manhattan, Kelley investigated a stock fraud case involving Christie's younger brother, Todd, but declined to prosecute him. Kelley was later picked to monitor Biomet Orthopedics Inc.

Orthopedics This Week

VOLUME 5, ISSUE 22 | JULY 21, 2009

David Samson. A former New Jersey Republican attorney general and party fundraiser, Samson was a monitor of medical device maker Smith & Nephew. His firm is now on Christie's payroll for legal work: the candidate's pre-election finance report last month listed expenditures of $9,439.40 in legal fees/rent and $18,439.40 still owed to Wolff & Samson of West Orange, New Jersey.

Debra Wong Yang. Like Kelley, Yang, a former U.S. attorney in Los Angeles, is a former Christie colleague. The Republican-connected prosecutor and Gibson, Dunn & Crutcher partner, who had ties to former Attorney General Alberto Gonzales, was chosen to monitor DePuy Orthopaedics Inc.

John Carley. A former Cendant Corp. vice president and Federal Trade Commission lawyer under President Reagan, Carley was on Sen. John McCain's 2008 New York fundraising team. He oversaw a nonprosecution agreement involving Stryker Orthopedics.

Herbert Stern. Christie mentor Stern got a $10 million contract to monitor University of Medicine & Dentistry of New Jersey, which was accused of double-billing for services covered by Medicare. Christie close friend and fundraiser, John Inglesino, a partner in Stern's law firm, was paid $325 per hour for his work as counsel on the monitorship. Stern, Inglesino, another partner and their wives later gave $23,800 in donations to Christie's campaign for governor. The donations were matched, 2-1, under New Jersey's campaign finance laws, bringing the total amount to $71,400.

Stryker Lawyer: "Industry Broken"

Stern was also reportedly involved in Stryker's decision to cooperate with Christie. According to an October 17, 2007, article in the *New Jersey Law Journal,* Christie said he sent subpoenas to all five companies in March 2005. Soon after, Stryker's attorney, Herbert Stern, told Christie his client felt the "industry was broken, it was part of the problem, and offered to help fix it," Christie said, adding that it was "a stark difference from the approach the other four companies took" and greatly aided the investigation.

Stryker declined to comment to *OTW* regarding this assertion.

Two months after Stryker signed a nonprosecution agreement with the DOJ, Christie appointed Stern as the monitor of the University of Medicine & Dentistry of New Jersey. Christie said the appointment posed no conflict because the type of cooperation Stryker was willing to give merited the treatment it got.

Voters, Orthopedics and Right to Know

Christopher Christie has a safe lead in the polls over the Democratic incumbent. But if Democrats have their way, orthopedics will remain on voters' minds through the rest of the summer and into the fall.

Perhaps this partisan brawl in New Jersey will continue to shed light on an era of orthopedics that is still hiding under the rug. Physicians, patients, payers, and the public have a right to know what went wrong during a time of alleged misbehavior by companies and some physician consultants.

VOLUME 5, ISSUE 22 | JULY 21, 2009

AAOS Through the Eyes of Residents: Part I

By Elizabeth Hofheinz, M.P.H., M.Ed

Much as the flashing neon lights and one-armed bandits of Las Vegas had their siren songs, so did the 2009 Las Vegas meeting of the American Academy of Orthopaedic Surgeons (AAOS). Adventures in hip arthroscopy, advanced spine techniques, risk management, insurance issues, etc. With so many tempting topics, where to turn? How to organize one's time? Such questions are particularly challenging for those yet to launch an independent career, namely, orthopedic surgery residents. Not to mention that this array of educational topics, industry offerings, posters, videos and more only mirrors the increasingly complex environment in which orthopedists must practice.

As a seasoned surgeon, you confidently walk into an operating room, having thought through all of the steps and possible curve balls of the surgery the night before. Prior to being the meticulous, skilled surgeon of today, however, you were a trainee…less confident, less experienced, and less knowledgeable. You were a resident, and you needed to gain that confidence, experience and knowledge. Part of the puzzle fell into place when you were allowed to attend your first official trade or society meeting. You met luminaries, heard about new procedures, and learned of controversies in the field. And with each meeting perhaps you became a bit more wedded to your chosen profession…you felt like you belonged.

Such career integration is more likely to happen when organizations award residents with the time and attention that will help them grow into seasoned orthopedists. For a number of years, AAOS has been attempting to do just that. With its residents symposium, as well as educational seminars designed for the budding surgeon, AAOS has increasingly been directing its efforts toward the advancement of the next generation of orthopedists.

And there is much to be done. With the shifting, hot sands of insurance regulations, federal, state and local laws, and industry controversies, residents have more issues than ever competing for their attention. Read on to learn what a sampling of the nearly 1200 resident attendees of the 2009 AAOS meeting had to say about programs, companies, and their surgical elders.

General Impressions

It's 10AM. The rep is in the waiting room, the patient is on the table, the insurance company is looking for information, and your lead nurse has called out. In a way, this daily juggling act is a mirror of what orthopedists experience when they attend a large society meeting. At any given moment there are multiple things vying for an orthopedist's attention. The trick is triage.

Dr. Andy Kuntz, a fourth year resident at the Hospital of the University of Pennsylvania in Philadelphia, was one of ten residents interviewed. He was very impressed with the meeting, finding it to be well rounded with a significant amount of helpful information. But, says this first time attendee, it was *huge*. Dr. Kuntz: "It was a little overwhelming at first. I was actually quite surprised at the vastness of it all."

The enormity also had Dr. Nael Shanti, a fifth year resident at Suny Downstate Medical Center in Brooklyn, shaking his head. "It was a really useful meeting, but sometimes it was a little overwhelming. There were just so many things going on at the same time."

Dr. Jerry Labson, in his fourth year at the University of California, Davis (UCD), says, "From the mammoth exhibit hall to the sweeping number of lectures, everything was somewhat overwhelming. It was challenging to focus every day and to determine which meeting to attend and what would give me the highest yield."

A second year resident from UCSD also felt such pressures. Dr. Vid Upasani explains, "I've attended two previous AAOS meetings, but this year because the conference was in Las Vegas it was overwhelming. It was hard to stay focused on the event because there were so many distractions. I didn't get as much from the experience as in the past."

The perspective of Dr. Wade Van Sice, however, a third year resident at Tulane University in New Orleans, was different. A first-timer to AAOS, Dr. Van Sice notes, "This was an outstanding academic conference. I haven't seen any organization that has put on such a useful, well organized event. It really opened my eyes as to how much advocacy the Academy does and the political weight they hold."

Dr. Sean Waldron, in his fourth year at Case Western Reserve University in Cleveland, adds, "I never felt treated any differently because I am a resident. Everyone I interacted with was very helpful and happy to answer my questions."

A fifth year resident at The University of Texas Southwestern Medical Center at Dallas, Dr. Sara Strebe said, "The event was very well organized, and the programs were pertinent to what I am currently studying."

Logistics

Perhaps some sort of orthopedic GPS system would have helped. "You are 22.5 yards from the spine symposium. Take the next left at the Venetian Ballroom C and go…" Without such assistance, however, many of the residents interviewed found navigating the 2009 meeting to be somewhat frustrating.

Mir Ali, M.D., Ph.D., a fifth year resident at Mayo Clinic in Rochester, Minnesota, found things to be a bit less smooth than previous years. "While the event was good overall, it was more congested than the last couple of meetings. The booth areas and hallways were tightly packed… and Las Vegas as a setting is not my favorite because there's just too much going on."

Dr. Van Sice added, "Having the activities in so many buildings made it difficult to get around. And the casinos being set up in such a confusing way didn't help things."

On getting the lay of the land, Dr. Kuntz noted, "Because the layout was a bit confusing, I had to spend a fair amount of the first morning figuring out where things were."

Dr. Upasani found himself in a maze of sameness. "Not only was the layout unclear, but every place looked the same. This meant that when you were coming in from the different hotels into the expo area it was easy to get lost. At times it was even difficult to identify what floor you were on."

Dr. Krzysztof Siemionow, finishing up his sixth year at the Cleveland Clinic,

added, "I have never been to a meeting where people had to stand for talks—despite having plenty of conference space. If you entered even five minutes late you would inevitably interrupt the speaker, as well as those around. They must have underestimated the popularity of the talks."

It *was* smooth sailing for Dr. Strebe, however, who said, "I thought the venue contributed to the success of the event because most of the meetings were in close vicinity. I had no problem accessing the events and in fact found it to be easier than the San Francisco meeting because that was too spread out."

Residency Symposium

Struck by the need to bring future orthopedists into the Academy fold, ten years ago AAOS instituted a residency symposium as part of the annual meeting. The driving force behind the program was and continues to be Kathie Niesen, Education Manager for AAOS. Of the symposium's origins, Niesen says, "Not only did we want to get more residents involved in the organization, but we also thought that a symposium would be a good chance to provide them with information that they don't get in medical school or residency."

Having reviewed the positives and negatives of ten years' worth of feedback, Niesen and her colleagues know that while the symposium can always be improved, it serves a valuable role in preparing the next generation for practice and service to the orthopedic community. Kathy Niesen: "Each year we have had a sponsor for the symposium, however this past year they pulled out. The

AAOS leadership recognizes the importance of the event, however, so we decided to cover the costs and keep the event as free of charge to residents."

The Academy does what it can to ensure that the topics included are on-target. Dr. Philip Wolinsky, who has chaired the Residents Symposium for the past three years, says, "Each year we review the residents' feedback and make alterations where possible. The 2009 Residents Symposium included presentations on 'Building a Successful Practice,' 'Marketing Yourself and Your Practice,' and the always popular, 'Avoiding a Lawsuit.' We also had a very animated attorney on hand to discuss the ins-and-outs of contract negotiation. The residents were curious about things such as how to handle it if a big name entity hands them a contract (how to assess the situation and evaluate it)."

Much of what competes for the residents' attention is on the home (hospital) front. Many residents were allotted only two or three days away from their programs, and thus were not able to attend the Residents Symposium, held the day before the official start of the meeting. There are few, if any, options for scheduling this event, however, as the remainder of the week is wall-to-wall activities. Among those who did attend were Dr. Labson, who stated, "The Resident Symposium was one of the best things I went to all week. There were a lot of important administrative things on the agenda, such as coding…things that we'll get hit with sooner or later. The only topic I would have added is that of financial planning, covering things such as taxes and how to employ irrevocable trusts to protect one's family."

Dr. Strebe notes, "I found the Residency Symposium to be an improvement over last year's event because the topics were more relevant. I think it would be great if they could provide a dedicated time for us to talk to the experts who conduct the presentations. Many of us had questions that were individual to us, but there wasn't enough time for them because the audience was so large. Perhaps discussion groups would be a way to cover more ground."

Dr. Colin Harris, a fifth year and Chief Resident at the University of Medicine and Dentistry of New Jersey, adds, "Tuesday's symposium provided a lot of useful pointers and opened my eyes as to the complicated, but important nature of coding. Overall, I found the handouts to be well written and thorough. The only downside was that a couple of the speakers covered the same topics."

Dr. Wolinsky, who will pass the baton to a new Chair next year, advises, "To best benefit the residents I think we need to ensure that there is little or no overlap between the presentations. It is also important to be aware that there will only be an increasing number of things competing for the residents' time so we have to keep the program at a reasonable length. We do need to add a bit more Q&A time, however…and always consider the evaluation forms and remain open to change."

Educational Programs

Perhaps the phrase, "Leave no bone unturned" was in the minds of those who planned the 2009 meeting. With everything from when you should use biologics to pediatric congenital deformities of the foot, there was a surfeit of offerings for all manner of surgeon.

Dr. Van Sice, who is headed for a sports medicine career, found what he was looking for. "The lectures and experts were just incredible. It was particularly helpful to have such thorough handouts that I could take home for future reference. I did find it hard to plan my daily schedule, however, because there were so many overlaps. I'm not sure if anything could be done about that, though."

Dr. Shanti echoed Van Sice's thoughts. "Many times I had to miss things I wanted to attend because there were three great events going on at once."

For Dr. Waldron, whose specialty is pediatric orthopedics, information on

the nuts-and-bolts of daily life as a surgeon was the most valuable. "The practice management sessions were the most useful aspects of the meeting for me because I rarely get to hear about such things in my residency. Also informative was the session on taking one's career from residency to the first job."

One resident, who asked to remain anonymous, stated, "The only event I found to be lacking was the one on going from residency to your first job. They talked about mentoring in medical school, but since we were beyond that it didn't apply to us."

Choosing between anatomical areas was a challenge for Dr. Labson, a general orthopedist who is in the U.S. Air Force. He says, "It was easy to miss out on things. For example, if an ankle talk conflicted with a shoulder talk and you chose the ankle talk, but it wasn't of the best quality, you lost on both the ankle and shoulder fronts. On the upside, however, because we residents are routinely exposed to the opinions and routines of our own attendings, the educational sessions were a great chance to see how other surgeons do things."

For Dr. Upasani as well, the value was in the variety of viewpoints. "The panel format where speakers were assigned different topics and debated amongst each other was exciting and informative. It really drove home the point that there is no clear way to do some procedures. I was also pleased to see that my area of interest, pediatrics, was given so much attention this year."

Dr. Ali, however, needed a bit more variety. "The quality of the seminars was terrific, as was the pace. I did find, however, that the sessions were very similar to the year before. On the whole that's fine, but I think it would be an improvement to change presenters and topics around somewhat. Specifically, I would like to see a seminar on how to avoid pitfalls early in one's spine career, as well as one on how to navigate through your first practice."

Also chanting "spine, spine" was Dr. Siemionow. "I know it's not fair, but I would love to see more spine seminars. I did find the ones offered to be truly interesting with very relevant material. I would like to see the new technology section expanded somewhat, however."

Next week: AAOS Through the Eyes of Residents: Part II

The Best Orthopedic Hospitals in America

By Robin Young

U.S. News and World Report (USN&WR) issued its list of top U.S. hospitals this week. For 20 years USN&WR has been ranking hospitals according to surgical specialty. More recently, the payer community has also started to rank hospitals. Medicare uses several measures to quantify hospital performance, including patient surveys. The Leapfrog Group for Patient Safety also measures hospital performance along a number of safety factors including infection control. Finally, private insurers are using their own data to evaluate hospitals.

After reading the USN&WR rankings last week, we decided to check the other sources and then combine rankings to arrive at a composite score. We used elements of the USN&WR rankings, the U.S. Department of Health and Human Services (HHS) patient survey data, and data from the private Leapfrog patient safety study to arrive at a composite ranking for orthopedic hospitals in the United States.

Based on that composite study, the #1 orthopedic hospital in the United States is the Hospital for Special Surgery (HSS) in New York City.

USN&WR ranked HSS #2 in the country in orthopedics and the Mayo Clinic #1. When we included HHS patient surveys and other data, we found that the Mayo Clinic fell one spot in the rankings and HSS emerged as #1. For example, while USN&WR gave the Mayo Clinic the top ranking for reputation, the Mayo Clinic failed to make the top 10 in terms of patient satisfaction (#11) or mortality index (#12). HSS, by contrast, may not have had a reputation as strong as the Mayo Clinic (HSS was #2), but it did have the lowest mortality index (#1) and the second-best HHS-derived patient survey rating.

To us, higher patient satisfaction and lower mortality rates trump reputation. HSS is #1.

An explanation of our methodology follows at the end of this article.

What's In a Reputation?

For more than 100 years the Mayo Clinic in Rochester, Minnesota, has been synonymous with the highest-quality health care and

Table 1: The Top Orthopedic Hospitals in America

		Total Score
1	Hospital for Special Surgery, New York	63.5
2	Mayo Clinic, Rochester, Minnesota	61.4
3	Massachusetts General Hospital, Boston	48.6
4	Cleveland Clinic	41.1
5	Johns Hopkins Hospital, Baltimore	32.2
6	Duke University Medical Center, Durham, North Carolina	31.8
7	New York-Presbyterian University Hosp of Columbia and Cornell	29.6
8	NYU Hospital for Joint Diseases, New York	28.2
9	UPMC University of Pittsburgh Medical Center	27.5
10	Barnes Jewish Hospital / Washington University, St. Louis	27.1

Source: Orthopedics This Week composite ranking

clinical research. That reputation made Rochester, Minnesota, one of the original medical tourism destinations. Today, that reputation is supporting an ever growing range of satellite Mayo Clinics. Patients can now visit the Mayo Clinic in Phoenix, California, Florida and, of course, Rochester, Minnesota.

More recently, the Mayo Clinic has been used to illustrate how to deliver the best health care at lower than average prices, and it is becoming a poster child for a new healthcare delivery paradigm.

Coming in #2 on the USN&WR orthopedic reputation scale (see Table 2) is the largest orthopedic hospital in the United States—the Hospital for Special Surgery (HSS) in New York City. According to USN&WR, HSS treats more than 12,600 orthopedic patients annually. The next busiest institution in the USN&WR ranking was the Mayo Clinic with about 9,600 orthopedic patients and then the Beaumont Hospital in Royal Oak, Michigan, with 8,300 annual patients.

Table 2: USN&WR Orthopedic Reputation

		Score
1	Mayo Clinic, Rochester, Minnesota	40.5
2	Hospital for Special Surgery, New York	39.5
3	Massachusetts General Hospital, Boston	26.3
4	Cleveland Clinic	22.1
5	Johns Hopkins Hospital, Baltimore	12.4
6	Duke University Medical Center, Durham, North Carolina	11.2
7	New York-Presbyterian University Hosp of Columbia and Cornell	10.7
8	UPMC University of Pittsburgh Medical Center	9.2
9	University of Iowa Hospitals, Iowa City	8.7
10	Ronald Reagan UCLA Medical Center, Los Angeles	8.3

Source: U.S. News & World Report, 2009

Which Orthopedic Hospitals Do Patients Prefer?

The Centers for Medicare & Medicaid Services (CMS), the Hospital Quality Alliance (HQA) and the nation's hospitals have collaborated to create and publicly report hospital quality information. The information collected from more than 4,500 hospitals in the United States measures how well each hospital cares for its patients.

According to CMS, hospitals, doctors, scientists, and other healthcare professionals agree that the quality measures being tracked in this program give a good snapshot of the quality of care that hospitals give.

As part of the data collection process, CMS and the HQA created a patient questionnaire that, essentially, asked patients to rate their care on a series of measures on a scale of 1 to 10, with 10 being the highest score.

We used that patient survey data to determine which orthopedic hospital patients liked the best. Table 3 gives the percentage of patients who rated a hospital at "9" or "10" overall.

Table 3: Orthopedic Hospitals Patients Like Best

		HHS Patient Surveys
1	New England Baptist Hospital, Boston	83%
2	Hospital for Special Surgery, New York	78%
3	Texas Orthopedic Hospital, Houston	78%
4	Massachusetts General Hospital, Boston	77%
5	Brigham and Women's Hospital, Boston	76%
6	Dartmouth-Hitchcock Medical Center, Lebanon, New Hampshire	76%
7	St. Joseph Hospital, Orange, California	76%
8	John Muir Medical Center, Walnut Creek, California	76%
9	Central DuPage Hospital, Winfield, Illinois	75%
10	Poudre Valley Hospital, Fort Collins, Colorado	75%
11	Mayo Clinic, Rochester, Minnesota	74%

Source: HHS Patient Survey Data

Mortality:

CMS, in an effort to land on one statistic that would measure hospital performance, came up with mortality statistics. In terms of orthopedics, that is probably not the most powerful statistic. In fact, as Table 4 illustrates, the likelihood that a patient will die as a result of orthopedic surgery is extremely low. In many ways, for the purposes of these rankings, HSS has an inherent advantage over such multi-service hospitals as the Mayo Clinic or Mass General or Cleveland Clinic.

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1. Data on file at DePuy Orthopaedics, Inc.

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Table 4: Orthopedic Surgery

		Mortality Index
1	Hospital for Special Surgery, New York	0.11
2	New England Baptist Hospital, Boston	0.26
3	Bon Secours Cottage Health Services, Grosse Pointe, Michigan	0.28
4	Pennsylvania Hospital, Philadelphia	0.31
5	Methodist Hospital, Houston	0.39
6	Rush University Medical Center, Chicago	0.40
7	Texas Orthopedic Hospital, Houston	0.40
8	Tampa General Hospital	0.41
9	Union Memorial Hospital, Baltimore	0.42
10	Long Beach Memorial Medical Center, Long Beach, California	0.43

Source: CMS

Factors that determined the *Orthopedics This Week* composite rankings:

We considered many of the factors included in the U.S. News and World Report (USN&WR) rankings but added the HHS patient survey and the Leapfrog Group's ratings, then excluded three of the USN&WR rankings (discharges, nurse magnet hospital, and existence of a trauma center).

So the eight factors we used to determine the relative attractiveness of orthopedic hospitals in the United States were:

1. Reputation
2. Mortality Index
3. Patient Safety Index
4. Nurse Staffing
5. Key Technologies
6. Patient Services
7. Leapfrog Ranking
8. HHS Patient Survey

Table 5: The Top 50 Orthopedic Hospitals in America

Source: Orthopedics This Week composite ranking

		Total Score
1	Hospital for Special Surgery, New York	63.5
2	Mayo Clinic, Rochester, Minnesota	61.4
3	Massachusetts General Hospital, Boston	48.6
4	Cleveland Clinic, Ohio	41.1
5	Johns Hopkins Hospital, Baltimore	32.2
6	Duke University Medical Center, Durham, North Carolina	31.8
7	New York-Presbyterian University Hosp of Columbia and Cornell	29.6
8	NYU Hospital for Joint Diseases, New York	28.2
9	UPMC University of Pittsburgh Medical Center	27.5
10	Barnes Jewish Hospital / Washington University, St. Louis	27.1
11	Ronald Reagan UCLA Medical Center, Los Angeles	26.7
12	University of Iowa Hospitals, Iowa City	26.5
13	Brigham and Women's Hospital, Boston	25.6
14	University of California, San Francisco Medical Center	25.2
15	Thomas Jefferson University Hospital, Philadelphia	25.1
16	Rush University Medical Center, Chicago	24.4
17	University of Washington Medical Center, Seattle	24.4
18	New England Baptist Hospital, Boston	24.1
18	University of Michigan Hospitals and Health Center, Ann Arbor	24.1
20	Hospital of the University of Pennsylvania	23.7
21	Harborview Medical Center, Seattle	23.4
22	Ohio State University Hospital, Columbus	23.1
22	Union Memorial Hospital, Baltimore	23.1
24	Central DuPage Hospital, Winfield, Illinois	22.4
25	University Hospitals Case Medical Center, Cleveland	22.2
26	Mount Sinai Medical Center, New York	21.8
27	Holy Cross Hospital, Fort Lauderdale	21.4
27	Hackensack University Medical Center, New Jersey	21.4
29	Northwestern Memorial Hospital, Chicago	21.3
29	Pennsylvania Hospital, Philadelphia	21.3
31	Dartmouth-Hitchcock Medical Center, Leganon, New Hampshire	20.9
32	Cedars-Sinai medical Center, Los Angeles	20.7
33	Texas Orthopedic Hospital, Houston	20.6
34	Stanford Hospital and Clinics, Stanford, California	20.4
35	Grant Medical Center - OhioHealth, Columbus	20.1
36	Methodist Hospital, Houston	19.7
36	Abbott Northwestern Hospital, Minnesota	19.7
38	Christ Hospital, Cincinnati	19.1
38	Clarian Health, Indianapolis	19.1
40	St. Joseph Hospital, Orange, California	19.0
40	Sentara Leigh Hospital, Norfolk, Virginia	19.0
40	Poudre Valley Hospital, Fort Collins, Colorado	19.0
43	Good Samaritan Hospital, Baltimore	18.8
44	Virginia Commonwealth University Health System, Richmond	18.6
44	Beaumont Hospital, Royal Oak, Michigan	18.6
46	Greenville Memorial Hospital, Greenville, South Carolina	18.5
47	Long Beach Memorial Medical Center, Long Beach, California	18.4
48	John Muir Medical Center, Walnut Creek, California	18.1
49	Tampa General Hospital	16.6
50	Bon Secours Cottage Health Services, Grosse Pointe, Michigan	12.0

2009 Orthopedics This Week Spine technology Awards

Deadline approaching for awards submissions!

Submit your spine technology by August 15, 2009

Remember, it costs you nothing to enter your new spine technology or product, and there are no limits to the number of submissions by any company.

All submissions will be voted on at the Spine Technology Awards Banquet on November 9, 2009, in San Francisco, by attending spine surgeons.

These awards are the first of their kind and are designed to honor the best spine products, engineering teams and inventors of 2009.

Entries are being accepted in eight categories:

- Device Technologies for Cervical Care
- Lumbar Care
- Motion Preservation of the Spine
- Minimally Invasive Care
- Biomaterials
- Diagnostics and Imaging
- Pain Management
- Regenerative Technologies

Each company or individual that submits products for evaluation will receive a corporate award from *Orthopedics This Week* at the podium during the awards ceremony on November 9 in San Francisco.

The 24 finalists and the first place, second place and third place **awards in each category will be determined by two separate real-time surgeon votes at the November 9 event.** The engineers/inventors for the top three products in each of the eight categories will be invited to the podium to describe their invention to the assembled surgeons before the final ranking vote is taken. The top three products in each category will receive crystal awards at the ceremony. Those receiving awards need not be present to win.

Enter today—your technology could be judged a winner by spine surgeons!

Click here to print an entry form and obtain more information, or contact Tom Bishow at tom@ryortho.com or Lisa Carpenter at lisa@ryortho.com.

RY Publications

Reverse Shoulder Replacement's Soaring Popularity

By Dev Joshi, PearlDiver Extremities Analyst

When you're the new kid in town, it can be hard to adjust. But sometimes, if you hit the ground running, you can find yourself at the center of everyone's attention. In the field of extremities repair, the reverse shoulder replacement procedure is still relatively new, but the number of performed procedures is growing at such a pace that it has exceeded both the surgeons' and the device manufacturers' expectations.

Though in use in Europe for about 15 to 20 years, the reverse shoulder replacement procedure was only approved by the FDA for use in the U.S. in March 2004. Since then, this new kid in town has made a dramatic impact on the shoulder repair market. From 2004 through 2008, total shoulder replacements, including reverse and partial replacements, have grown by almost 60% in the United States according to the PearlDiver Patient Record Database, United States healthcare reports and information from other databases. The market for reverse shoulder replacements, which had barely 2,000 patients in 2004, has grown to an estimated 15,000+ patients in the past five years.

The billing code for reverse shoulder replacements and total shoulder replacements may still be the same, but these procedures have one key difference. A normal total shoulder replacement prosthesis device includes a simple ball, called the "humeral head," and a socket joint called the "glenoid." A reverse shoulder device has a metal ball that replaces the glenoid and a plastic socket that replaces the humeral head, changing the mechanics of the total shoulder device and, in effect, reversing it. The reverse shoulder replacement device has been especially useful for older patients with fracture-related injuries, rotator cuff injuries and arthritis.

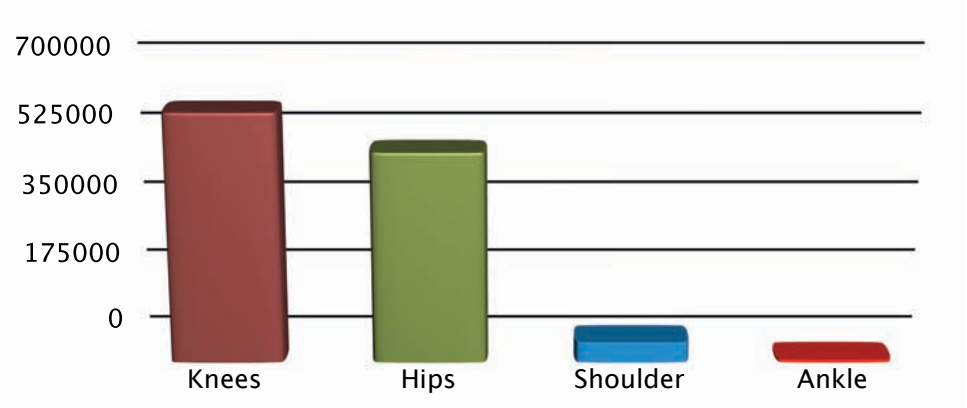
The reverse system products and treatments are now getting more worldwide recognition than primary shoulder replacement devices due to improved performance that provides much-needed relief for an aging population. The PearlDiver database reveals that almost 47% of the patients who received a total shoulder replacement through 2004 to 2007 had either partial or full rotator cuff tears, one of the common symptoms experienced by patients who received a reverse shoulder replacement. These patients have experienced fewer complications, and the reverse shoulder replacement procedure appears to provide the best care for patients who have rotator-cuff-tears as well as arthritis in their shoulders.

While physicians use the total shoulder replacement procedure to treat severe shoulder arthritis and to help patients regain their mobility and experience relief from pain, reverse shoulder replacements provide relief

to patients who suffer from the triple threat of chronic pain, arthritis and rotator cuff tears. This procedure can provide patients improved function and pain relief by replacing the worn out joint surfaces with an artificial joint made of metal and plastic.

The shoulder is the third most commonly replaced joint in the United States. While the numbers for shoulder replacements are not anywhere near those for hip and knee joint replacements, the growth in this segment, especially since the advent of reverse shoulder replacement procedures, has been no less than phenomenal. Reverse shoulder procedure provides a far more sophisticated option for patients with complicated shoulder joint injuries. Chart 1 shows the 2008 procedure volume for shoulder joint replacement patients (including reverse, total, and partial) compared to other segments of the joint replacement market.

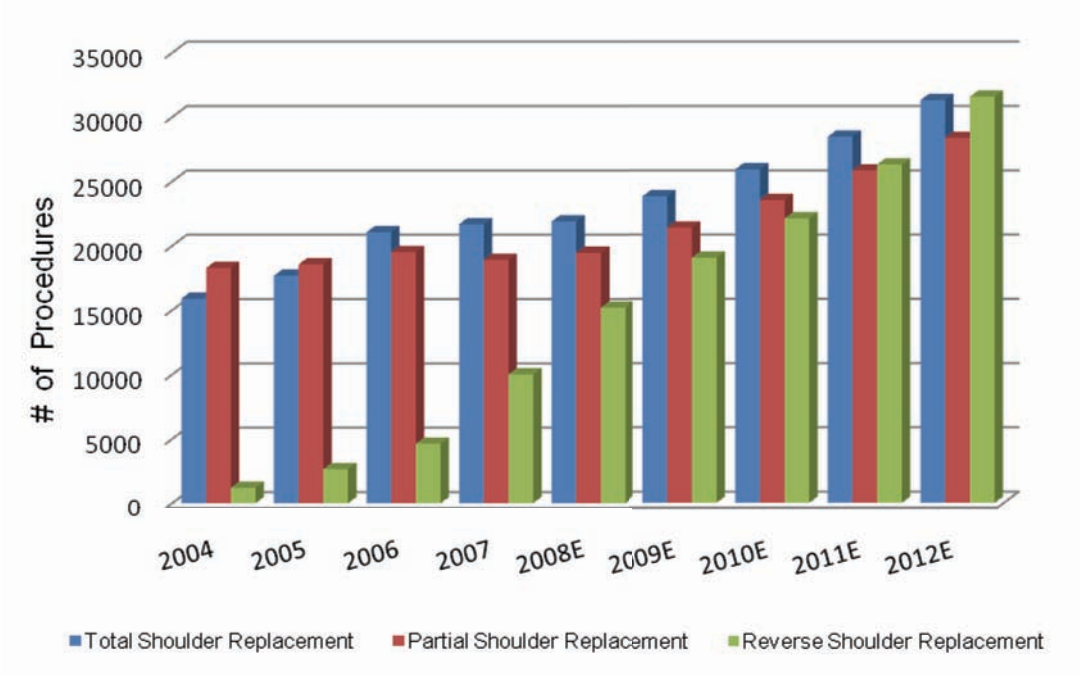
Chart 1: Joint Replacement in Orthopedics for 2008



Source:PearlDiver Patient Record Database research and estimates. The volume includes all replacement including total, partial, and revision.

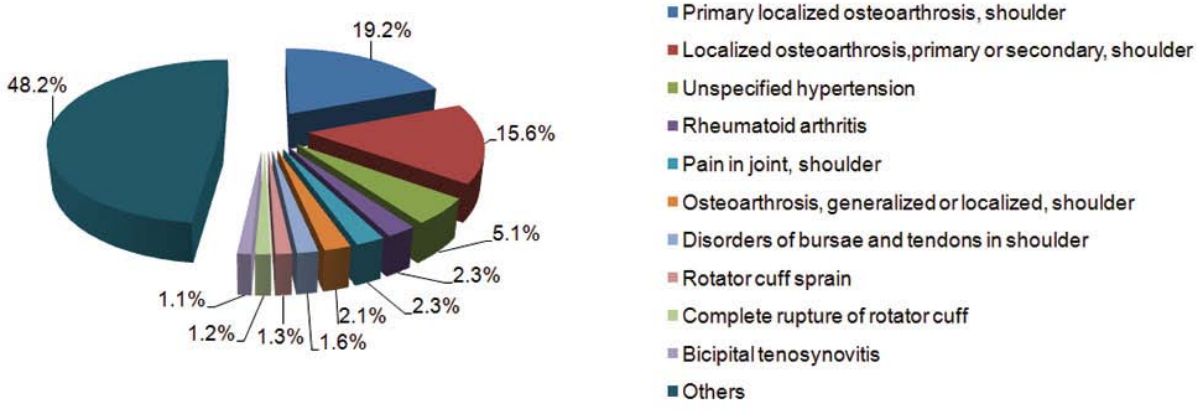
Chart 2 shows the growth in reverse shoulder replacement procedures. Total and partial shoulder replacements are also growing, but at much slower rates. The procedure volume data in Chart 2 shows a vast success from 2004 to 2008 within the reverse shoulder replacement procedure volume. With better treatment, improved outcomes, and the rise in ageing population, the number of patients opting for reverse shoulder replacement will surely continue to soar in the coming years.

Chart 2: Procedural Forecast for Shoulder Replacement Market in U.S. (2004-2012E)



The fact that the billing code is the same for both the total shoulder and the reverse shoulder replacement procedures can result in a diagnostic mix-up. Diagnoses commonly associated with the total shoulder replacement procedure are arthritis and osteoarthritis, while rotator cuff sprain and the complete rupture of the rotator cuff with severe arthritis condition are among the most common diagnoses associated with the reverse shoulder replacement procedure. Chart 3 illustrates the most common diagnoses related to the shoulder replacement billing code (ICD-9-P-81.80, CPT – 23472) derived from the PearlDiver database.

Chart 3: Common Associated Diagnoses



Source: PearlDiver Patient Record Database 2004-2007

The shoulder repair market represents almost three–fourths of the total extremities market, due mainly to the enormous progress made by orthopedic companies in developing the total shoulder, partial shoulder, and the new reverse shoulder replacement products. The shoulder repair market is now close to being a $500 million market worldwide and is growing at 15% or more annually.

DePuy, Inc. and Tornier, Inc. are the current industry leaders, and these two giants share half of the global shoulder repair market. Zimmer Holdings, Inc., Biomet, Inc., Encore Medical Inc. (Reable Therapeutics), and Exactech Inc. are other key players within this market.

The rapid success of shoulder repair devices is not only due to better clinical outcomes and performance but also the continuous improvement of products and technology, such as reverse shoulder systems. The leading reverse shoulder products and their manufacturers are Delta Xtend from DePuy, Aequalis from Tornier, Anatomical Reverse System from Zimmer, and the Equinoxe System from Exactech.

A key product on the market today is the second generation reverse shoulder system from Biomet introduced in May 2009. Called the Comprehensive Reverse Shoulder System, the device provides more intraoperative flexibility and has fewer limitations than did the first generation device.

Biomet Comprehensive Reverse Shoulder System

Dr. Dave Adkison of Birmingham, Alabama, a specialist in sports medicine and surgery of the knee and shoulder and a Board Certified Fellowship-Trained Orthopedic Surgeon, has professional experience using the Reverse Shoulder System from Biomet. Dr. Adkison told *OTW* in a recent interview that he sees this technology as a vehicle to treat the most difficult shoulder problems, especially those that involve rotator cuff arthropathy and those shoulder operations which require revision. He believes Biomet's new product has a superior fixation on the glenoid plate and glenosphere and best restores the center of rotation of the shoulder. He finds that the second generation product has much better stability and improved prevention of scapular notching. Furthermore, the modular options and offsets allow the shoulder to be ideally placed to fit the patient's anatomy. Dr. Adkison also mentioned that early motion restoration has been exceptional.

Another group to watch is a small company in Gainesville, Florida, called Exactech. Though its sales figures are relatively small, the company's innovation and strong product portfolio have brought it success with its total shoulder and reverse shoulder systems. In 2005, Exactech's shoulder device sales were less than $3 million, but the company is now aiming for $25 million in shoulder device sales for the fiscal year 2009.

Reimbursement for a reverse shoulder replacement is similar to that for a total shoulder replacement which is remarkable considering the more advanced technology involved and better patient outcomes that a reverse shoulder replacement provides.

According to PearlDiver research based on Medicare data, the average reimbursement for the facility is $9,835 and the average physician reimbursement is $1,280.

Even though shoulder repair represents a minuscule portion of an estimated $31 billion global orthopedic market, recent revenue growth has made shoulder repair a well-defined market that is targeting high growth driven by continuously improving technology. The result is a variety of innovative products that are providing improved outcomes for patients with very sore shoulders.

For more articles by this author, please select the following link: http://www.pearldiverinc.com/pdi/ext.jsp.

company news

DePuy Ortho Carries J&J

If not for hips, knees, and spine, Johnson & Johnson's second quarter sales would have declined more than the 7.4% drop reported on July 14.

According to Senior PearlDiver Analysts, hips, knees and spine were a pleasant surprise.

Johnson & Johnson The DePuy franchise of J&J continued to hold up sagging pharma, consumer products, and other medical devices sales. DePuy's reported sales were up 5% for the quarter in the U.S. A strong dollar hurt overseas sales as the entire franchise reported sales of $1.323 billion for the quarter. Overall, DePuy's reported sales declined 0.4%.

On an operational basis, DePuy's three main products groups reported the following for the second quarter:

Hips:	up 5%
Knees:	up 4%
Spine:	up 11%

PearlDiver Senior Analyst Scott Ellison commented that, "Wall Street estimates projected flat hip revenue growth and negative knee growth (-4%). PearlDiver estimates were closer—hip revenues had been projected to increase slightly (1%) and knee revenues had been expected to drop (-3%), but increases of 5% and 4%, respectively, are a pleasant surprise."

The 11% operational growth in spine beat PearlDiver's expected growth rate of 7%.

While flat sales don't sound like a lot to crow about, J&J's other franchises did considerably worse.

Reported second quarter sales showed:

J&J Overall:	down 7.4%
Consumer:	down 4.5%
Pharma:	down 13.3%
MedDevices.:	down 3.1%
DePuy:	down 0.4%

Company CFO Dominic Caruso told analysts on July 14 that the just completed quarter was one of the most challenging in company history. Caruso said that hospital were putting pressure on orthopedic pricing and the 10-year $155 billion savings deal that the hospital industry negotiated with the Obama administration and the Senate Finance Committee may hurt revenues in the future.

The agreement, announced July 8, calls for the $155 billion in savings over 10 years. Hospitals buy products from the device makers.

"The medical device industry will feel some impact from the current deal," Caruso said. "We would expect that the medical device manufacturers may feel an impact from that through the pressures that hospitals may face." The company noted that it anticipated "potential modest negative" pricing pressure for the remainder of the year.

Company officials also noted that orthopedic procedure volumes grew in the first quarter. Specifically, on a constant currency basis, hips procedure volumes were up 6% and knees were up 4%.

—WE (July 14, 2009)

company news

Disc Dynamics Loses CEO

Steve Healy, who has been Minnesota-based Disc Dynamics' CEO for the last seven years, is leaving the company.

Disc Dynamic Dascor System

In a statement reported in the Twin Cities media, Healy said he was leaving Disc Dynamics due to his "desire to be with a company in an early commercialization phase in the U.S. market."

That would not be Disc Dynamics, which is waiting for the FDA to decide in October whether it will approve its proposal to conduct a key clinical trial for its Dascor System. The company is currently completing its IDE feasibility clinical study.

One industry executive told us that Disc Dynamic's inability so far to get their IDE approved points to some regulatory shortcomings within the company. In addition, the product has not demonstrated adequate clinical outcomes when hospitals will have to make capital expenditures to use their product.

The window for non-inferiority is closing, said our executive, as demonstrated by payer comments that they are not going to pay for non-inferior products without demonstrating clinical outcomes for patients.

We'll know by October whether Disc Dynamics is looking through a closed window or if they got through before it closed.

The company named venture-capital firm Split Rock Partners' Dave Stassen as board chairman. Split Rock is an investor in Disc Dynamics, which has raised over $65 million in private equity funds since 2000. Another Minnesota spine company, Anulex, is also in Split Rock's portfolio. This is the second CEO of a Split Rock spine company that has left the company in the last year. Mike McCormick left Anulex last December.

Ron Burke, the company's Executive VP will manage the company's day-to-day operations until a decision about hiring a new CEO is made. Company CFO Keith Eastman said the company was unsure if it will replace Healy and will hold off on the decision until the fall.

—WE (July 17, 2009)

biologics

Biosteon Screw Promotes Healing

When making crucial repairs on wood joints in your home, it's always important to use the right kind of screw in order to maintain the structure without adding unnecessary damage. The same idea is true for anterior cruciate ligament (ACL) surgery, and Biosteon Interference Screws may be just right for the job.

Developed by the UK company Biocomposites Ltd., Biosteon Interference Screws are made of a composite biomaterial that stimulates bone healing as the screw is absorbed into the body. The company uses a patented process to combine poly-L-lactide and synthesized hydroxyapatite into the composite biomaterial.

A recent independent study concluded that Biosteon Interference Screws can improve the results of cruciate

biologics

ligament surgery. Because the body absorbs the screw and helps replace the cavity with bone, Biosteon Interference Screws reduce the risk that the cavity will increase in size or that the ligament graft will slip. The study, completed by the Division of Sports Trauma at Aarhus University Hospital in Denmark and the Musculoskeletal Research Centre at La Tobe University in Australia, followed 200 patients who underwent ACL reconstruction surgery with hamstring grafts. Half of the patients received Biosteon screws and the other half received titanium metal screws. At the 12-month follow-up period, the researchers found that the patients with Biosteon screws suffered less tibial tunnel widening than the patients with the titanium metal screws.

And there may be more favorable research on the way. According to Stephen Bratt, Biocomposites Managing Director, "Ongoing clinical studies investigating the osteoconductive, bone replaceable properties of Biosteon will further cement this technologies' position at the forefront of implant material design." Obtaining this goal will certainly be made easier with the company's partnership with Stryker Corporation, which has the size and the reach necessary to sell and distribute Biosteon Interference Screws worldwide.

—DK (July 10, 2009)

extremities

Shoulder Strength & Injury in Pitchers

It's all in the wind-up so you'd better have a solid shoulder…A new study recently presented at the American Orthopaedic Society for Sports Medicine's (AOSSM) Annual Meeting in Keystone, Colorado, suggests that testing a pitcher's preseason shoulder strength may help create a focused strength training program that could prevent serious injury during the season.

"The ability to identify pitchers at risk for injury could be extremely valuable to a professional baseball organization. Our study examined the predictive value of preseason strength measurements as they relate to in-season throwing injuries," said Ian Byram, M.D., in the news release.

The lead author and fourth-year orthopedic resident at Vanderbilt Medical Center, Dr. Byram, along with colleagues, looked at the preseason shoulder strength for all pitchers in a professional baseball organization over a five-year period (2001-2005). Over the course of the five-year period, they used a single protocol developed by an athletic trainer to assess 144 major and minor league baseball pitchers. Prone internal rotation (IR), prone external rotation (PER), seated external rotation (SER) and supraspinatus (SS) strength were tested during spring training prior to each season. The players were then followed throughout the season for incidence of throwing related injury.

The researchers found a significant association between PER, SER and SS strength with throwing related injuries requiring surgery. There was also some evidence for an association between the ratio of PER/IR strength and the incidence of injury.

extremities

"The shoulder and elbow are subjected to significant stresses during the pitching motion, placing them at risk for injury. By demonstrating an association between shoulder weakness and throwing related injuries, we hope that future injuries might be prevented by focusing strength training programs on those areas that are weakest," said Byram in the news release.

Regarding the evidence for an association between the ratio of PER/IR strength and the incidence of injury, Dr. Byram told *OTW,* "While this relationship was not statistically significant with $p<0.05$ ($p=0.051$ in this case), there does appear to be some evidence for an association between this ratio and the incidence of overall injury. Given this trend toward association, more data with a greater number of pitchers could possibly show a stronger relationship."

As far as where this work goes from here, Dr. Byram commented to *OTW,* "We hope that these findings will stimulate further research attempting to relate strength measurements to injury, possibly pooling data between multiple clubs. We now plan to use these findings to identify players who are more at risk for injury and place them in strengthening and rehabilitation programs tailored to their weaknesses."

—EH (July 15, 2009)

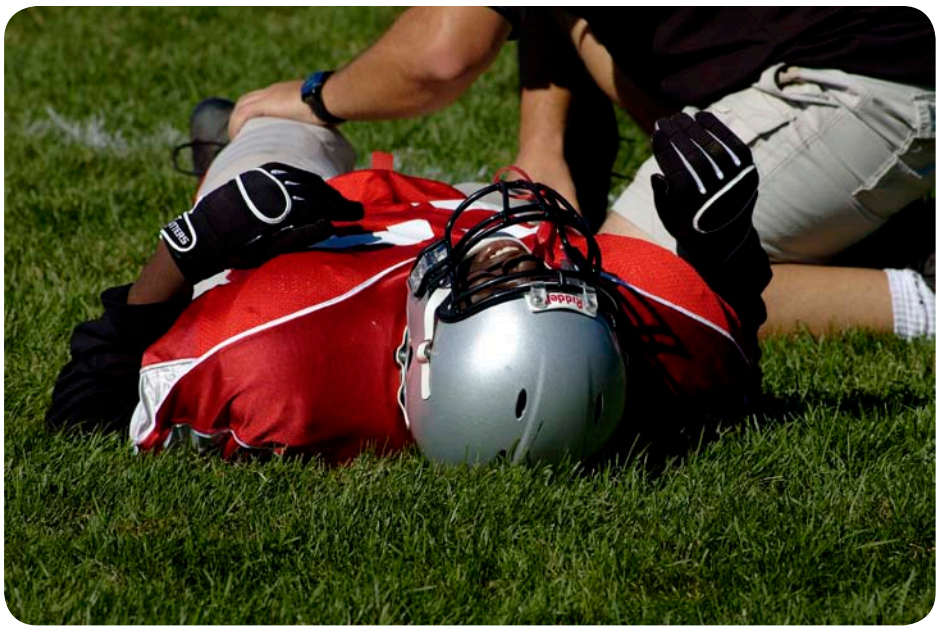
large joints

Stay in the Game

ACL doesn't mean "athlete cut loose." Researchers, led by Dr. Robert H. Brophy, Assistant Professor in the Department of Orthopaedic Surgery at the Washington University School of Medicine and Assistant Team Physician for the St. Louis Rams, have recently presented data indicating that athletes who undergo anterior cruciate ligament (ACL) reconstruction versus a simple meniscus repair may have a longer professional career.

"ACL reconstruction is a reliable surgical technique that enables professional football players to have similar length careers as their counterparts without ACL injuries. Although meniscectomy has a shorter recovery time than ACL reconstruction, these surgeries appear to lead to a significantly shorter career with fewer games played in the long term," Dr. Brophy in the news release.

The study, presented at the American Orthopaedic Society for Sports Medicine's Annual Meeting in Keystone, Colorado, utilized a database containing the injury history and career NFL statistics of athletes from 1987-2000. Those with a history of meniscectomy and/or ACL surgery and no other surgery or major injury were matched to a control group of athletes without previous surgeries. Athletes were also



large joints

matched by position, year drafted, round drafted and additional history. Fifty-four athletes with a history of meniscectomies, 29 with a history of ACL reconstruction and 11 with a history of both were identified and matched to controls.

Athletes who had undergone a meniscectomy on average reduced the length of their careers by approximately 1.5 years and their games played by 23. Isolated ACL surgery did not significantly reduce the length of years or games played. In those athletes with both surgeries, careers were shortened on average by nearly two years and 32 games.

"A combination of ACL reconstruction and meniscectomy may be more detrimental to an athlete's durability than either surgery alone. With further research, we will be able to better understand how these injuries and surgeries impact an athlete's career and what can be done to improve long-term outcomes," added Brophy.

—EH (July 11, 2009)

Young Athletes and ACL Surgery

If they're 14 or younger, these little bundles of joy may need to delay surgery on their bundles…knee bundles, that is. New data presented at the American Orthopaedic Society for Sports Medicine's (AOSSM) Annual Meeting in Keystone, Colorado, demonstrates the benefits and risks of repairing a torn anterior cruciate ligament (ACL) in young athletes under the age of 14.

"The risk of inducing a growth disturbance with early reconstruction of a torn ACL must be balanced against the risk of further knee damage by delaying treatment until closer to skeletal maturity," said author Theodore J. Ganley, M.D., in the news release. Dr. Ganley, Director of the Sports Medicine and Performance Center for The Children's Hospital of Pennsylvania and the University of Pennsylvania School of Medicine, added, "Our study measured the independent risk factors for and relative risk of meniscal and chondral injuries in pediatric ACL patients."

Researchers examined the medical records of 69 patients (14 or younger) who had undergone ACL reconstruction between 1991 and 2005. Information analyzed included demographics, mechanism and side of injury, time from injury to surgery, one or more episodes of instability with activity, use of brace and return to sports, earliest MRI findings, and physical exam findings. Operative reports and intra-operative images were also used to classify meniscal and articular cartilage pathology.

Patients were counseled on the benefits and risks of delaying ACL reconstruction, advised to avoid risky activities, and participated in physical therapy prior to their reconstruction. Those patients who delayed treatment

large joints

wore a custom ACL brace. All of those who underwent the surgery utilized a soft tissue graft with anatomically placed tunnels and fixation devices that did not cross the growth plate. At least one year of postop follow-up ensued with no growth disturbances being noted.

"In our study, the largest of skeletally immature patients to evaluate independent risk factors, a delay in treatment of more than 12 weeks had about a four-fold increase in irreparable medial meniscus tears, an 11-fold increase in lateral compartment chondral injuries and a three-fold increase in patellotrochlear injuries. Issues with instability in the knee were also increased significantly. Our results highlight and help quantify the risk associated with delaying ACL reconstruction in young athletes and the need for continued injury prevention efforts," said Dr. Ganley in the news release.

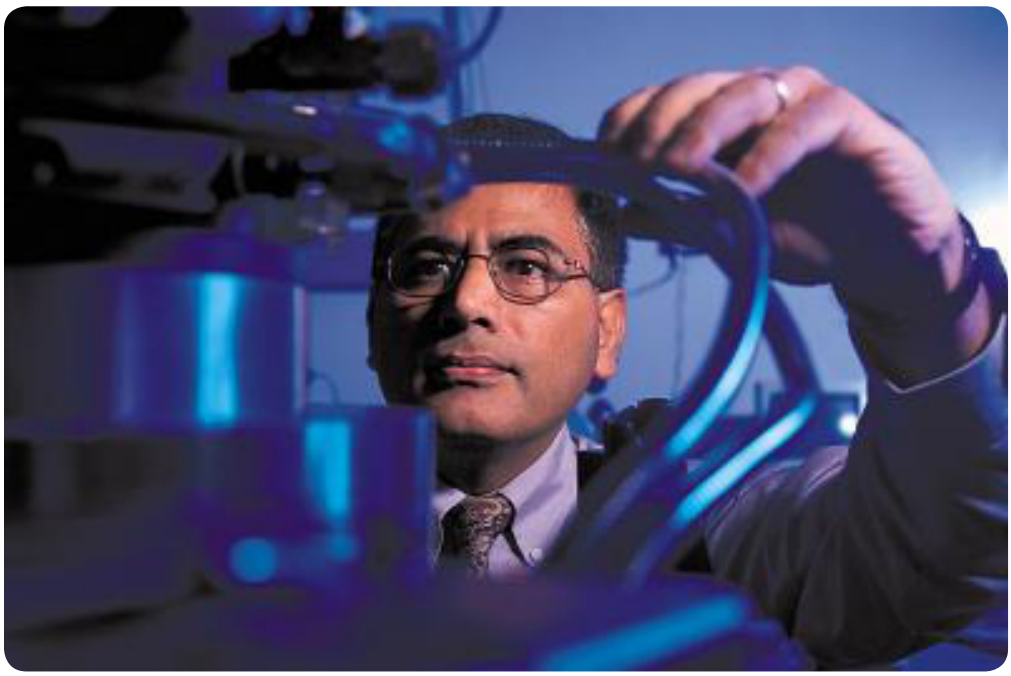
Commenting to *OTW,* Dr. Ganley noted, "The conversation between the orthopedist as well as the patient and parents should include a discussion of the athlete's complete medical and physical condition. Young athletes with medical or mental capacity issues that prohibit them from cooperating with rehabilitation are counseled toward nonoperative treatment. In otherwise healthy active young athletes the risks reported in this study suggest that early intervention should be strongly considered."

Regarding how he and his colleagues plan to get the word out about this issue, Dr. Ganley told *OTW,* "My coauthor John Todd Lawrence, M.D., and I have given presentations locally, regionally and nationally including the AOSSM Annual Meeting to notify clinicians of these issues."

—EH (July 12, 2009)

NIH Funding UAB Nano Research

There is strength in numbers… numbers in the bank and people with whom you can collaborate. The University of Alabama at Birmingham (UAB) is announcing the receipt of National Institutes of Health (NIH) funding that will expand its research into a nanostructured coating aimed at improving the performance and longevity of total joint replacement components. This opportunity will also mean that the UAB interdisciplinary research team


Dr. Yogesh Vohra

large joints

will work alongside professionals at Smith and Nephew.

The four-year, $790,931 NIH grant through the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) will support the UAB research, titled Bioengineering Research Partnership (BRP) in Total Joint Replacements. This next-generation technology to improve the service life of total joint replacements, said Yogesh Vohra, Ph.D., in the news release, could dramatically cut the number of recurrent surgical procedures performed each year. Dr. Vohra is the BRP's principal investigator and director of the Center for Nanoscale Materials and Biointegration (CNMB) in the UAB School of Natural Sciences and Mathematics.

"We have been researching our nanostructured multilayer diamond coating for a number of years inside our UAB facilities but there have been limitations to just how rigorous the testing could be," Vohra added. "The funding to partner with Smith and Nephew expands our research options because it offers us access to the company's resources and talent."

Vohra also indicated that the BRP will now be able to access Smith and Nephew's hip and knee simulators, which offer the most realistic testing conditions to date for their coating technology. Working with the multi-million dollar simulators should strongly indicate how well the team's nanostructured multilayer diamond coatings reduce the friction and wear on the metal components of orthopaedic devices, Vohra added. They will also be looking at any cellular and tissue responses to the technology and will confirm that there is no toxicity effect from any wear debris that is generated.

"This partnership is central to advancing our research toward more reliable and efficient joint replacements," Vohra said in the news release. "We are gaining access to state-of-the-art testing equipment while benefitting from Smith and Nephew's experience as the industry leader in advanced bearing-surfaces for joint replacement implants."

The BRP also helps put the UAB coating technology on the fast track for commercialization, as it will foster the private industry relationship necessary to secure investment and production capacity, Vohra said.

—EH (July 16, 2009)

people

McLeer New Pioneer Spine Boss

Pioneer Surgical Technology

Long-time spine industry sales veteran Tom McLeer is Pioneer Surgical's new Chief Marketing Officer and General Manager of Spinal Operations.

McLeer joins Pioneer after stints at Archus Orthopedics, Spinal Concepts, Interpore Cross, and various product management roles at Zimmer. He also had sales roles at Intermedics Associates, Howmedica-Johnson, and Abbott Laboratories.

At Archus he was responsible for directing all aspects of the creation of the company's new spinal implant segment, including world-wide strategy, growth, and development. He developed marketing, distribution, and training to facilitate clinical efforts and established local representation to handle cases in the United States, Europe, South America, and China.

At Pioneer, McLeer will be in charge of managing and directing all of Pioneer's

people

spinal operations, including marketing and sales.

Jeff Millin, Pioneer's President and CEO said in the July 10 announcement, "Tom brings real-world spine experience to a high class organization. He will be a great addition to help us maintain our high growth rate."

McLeer isn't just any sales guy though. He has also been named inventor on numerous issued or pending medical device patents. Some of those patents include: a polymeric joint complex and methods of use; implantable orthopedic device component selection instrument and methods; measurement and trialing system and methods for orthopedic device component selection; and, crossbar spinal prosthesis having a modular design and systems for treating spinal pathologies. He holds a B.S. in Business Administration and Marketing from Ohio State University.

McLeer and his wife Linda reside with their 12-year-old son in Redmond, Washington.

—WE (July 15, 2009)

spine

K2M Spacer System Cleared

K2M's Aleutian Spacer System has received FDA clearance for marketing.

Aleutian Spacer System

The system is cleared as an intervertebral body fusion device. On July 14 the company reported that the device's radiolucent properties have the potential to increase visualization of bone graft, while allowing for more accurate fusion assessment.

The company also believes that elastic modulus, one of the physical properties of the device's material, more closely matches that of cortical bone for load sharing with the potential to minimize stress shielding and enhance fusion results. The bulleted nose allows for easy insertion and distraction, and the self-retaining teeth can potentially provide post-operative stabilization of the implant.

The spacer system is one of five devices in K2M's Aleutian family of systems that offer anatomically designed PEEK-Optima interbody options, including the Anterior-Lumbar Interbody Fusion (ALIF), Small-Anterior (Cervical), Posterior-Lumbar Interbody Fusion (PLIF), Anatomically Narrow (AN), and Transforaminal-Lumbar Interbody Fusion (TLIF).

Raphael Roybal, M.D., an orthopedic spine surgeon at the Savannah Spine Institute added, "The Aleutian family of interbody PEEK cages provides a reproducible bridge where successful arthrodesis crosses over to superior anatomical reconstruction."

President and CEO Eric Major, who recently received the Ernst & Young Entrepreneur of the Year Award for Emerging Technologies in the Greater Washington region, said the clearance allows K2M to offer surgeons multiple surgical applications in the cervical and lumbar spine for the treatment of degenerative disc disease (DDD) and spondylolisthesis."

Congratulations Eric and happy marketing.

—WE (July 15, 2009)

Orthofix's Advent OK in Europe

Orthofix has received permission to begin marketing its first artificial cervical disc.

Unfortunately for American patients, it only received permission to sell their Advent Cervical Disc in Europe through a CE Marking.

On July 15, Alan Milinazzo, Orthofix President and CEO, said that receiving

spine

Advent Cervical Disc

permission to market the Advent in Europe was an important step in the company's plans for global commercialization of the device. He stated in a company announcement, "A key element of our plans for the continued expansion of our spinal implant portfolio is the addition of motion preservation devices that are designed to help spine patients maintain some degree of natural motion post surgically."

The company expects to begin selling the Advent in Europe during the fourth quarter on a limited basis.

And then it's on to the U.S.

The company already has a U.S. study underway as part of the FDA approval process. Approximately 100 patients are currently enrolled at 15 centers and the company plans to add 10 additional sites by the first quarter of 2010. The total patient enrollment is expected to reach 450 patients. When the study is completed, the company plans to seek FDA approval to market the device in the U.S.

The Advent is constructed with titanium endplates and a flexible elastomer core and is designed to be implanted using a surgical procedure that is similar to a standard anterior cervical discectomy and fusion (ACDF) procedure.

The European market for artificial cervical discs was estimated by the company to be approximately €37.5 million in 2008, and is expected to increase at a compound annual growth rate of 14% over the next several years.

PearlDiver Senior Analyst Matt Menze says that in 2006, there were over 230,000 cervical fusions, with the anterior approach being employed in over 90% of these. Through 2010, he says PearlDiver forecasts assume little cannibalization by cervical discs from fusion. However, the outlook for cervical total disc replacement seems bright and that annual revenues from cervical disc replacements could exceed $1 billion by 2015, dependent on reimbursement and successful outcomes.

Currently there are three cervical discs approved in the U.S. They are Medtronic's Bryan and Prestige discs and Synthes' ProDisc-C cervical disc approved in 2007.

In addition to the Advent, other cervical discs expected to seek FDA approval include:

SpinalMotion - Kineflex-C
Globus Medical - Secure-C
LDR Spine - Mobi-C
Stryker - Cervicore
NuVasive - PCM

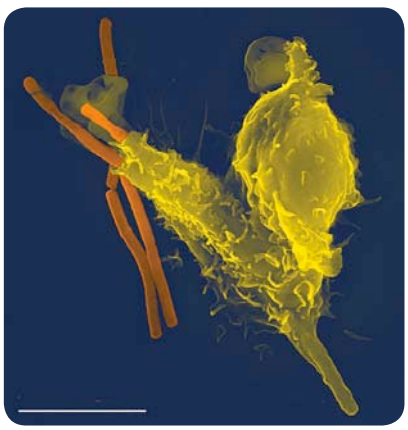
—WE (July 15, 2009)

trauma

Osteoporosis Drug and Immune System

Warding off death by warding off pathogens. Researchers from Duke University Medical Center's geriatric unit have found that the osteoporosis drug zoledronic acid (Reclast), which has been shown to save lives after hip fractures, may do so by strengthening the body's immune system.

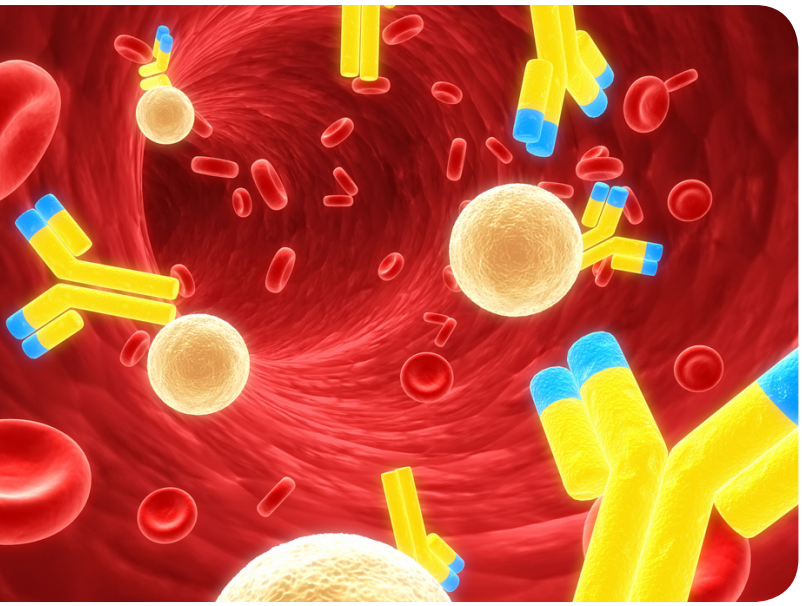
In 2007, Duke researchers reported a full 28% reduction in death among patients who received zoledronic acid (a bone loss inhibitor) within 90 days of surgery for a hip fracture. They also found that the 2,111 people who participated in the study were 35% less likely to suffer another fracture.



The power of the immune system.

"The findings marked the first time an osteoporosis medication was shown to have an effect on mortality, but they didn't tell us why the mortality rate was lower," said Dr. Cathleen

trauma



Colon-Emeric, an Associate Professor of Medicine at Duke, in the news release. "People assumed it was due to a reduction in secondary fractures. We wanted to know if that was the reason or were other conditions being affected by the medication."

Digging deeper, Colon-Emeric and her colleagues found that the reduction in additional broken bones accounts for only 8% of the mortality benefit. "Even after adjusting for secondary fractures and other risk factors, we found the risk of mortality was still 23% lower in the zoledronic acid-treated participants," Dr. Colon-Emeric added. "That suggests the drug must work in other ways."

"People who received the drug experienced common complications at the same rate as those who didn't," says Colon-Emeric. But the people in the zoledronic acid group were better able to survive these events. "In particular, people with certain cardiac problems such as arrhythmias and pneumonias were much less likely to die from those conditions."

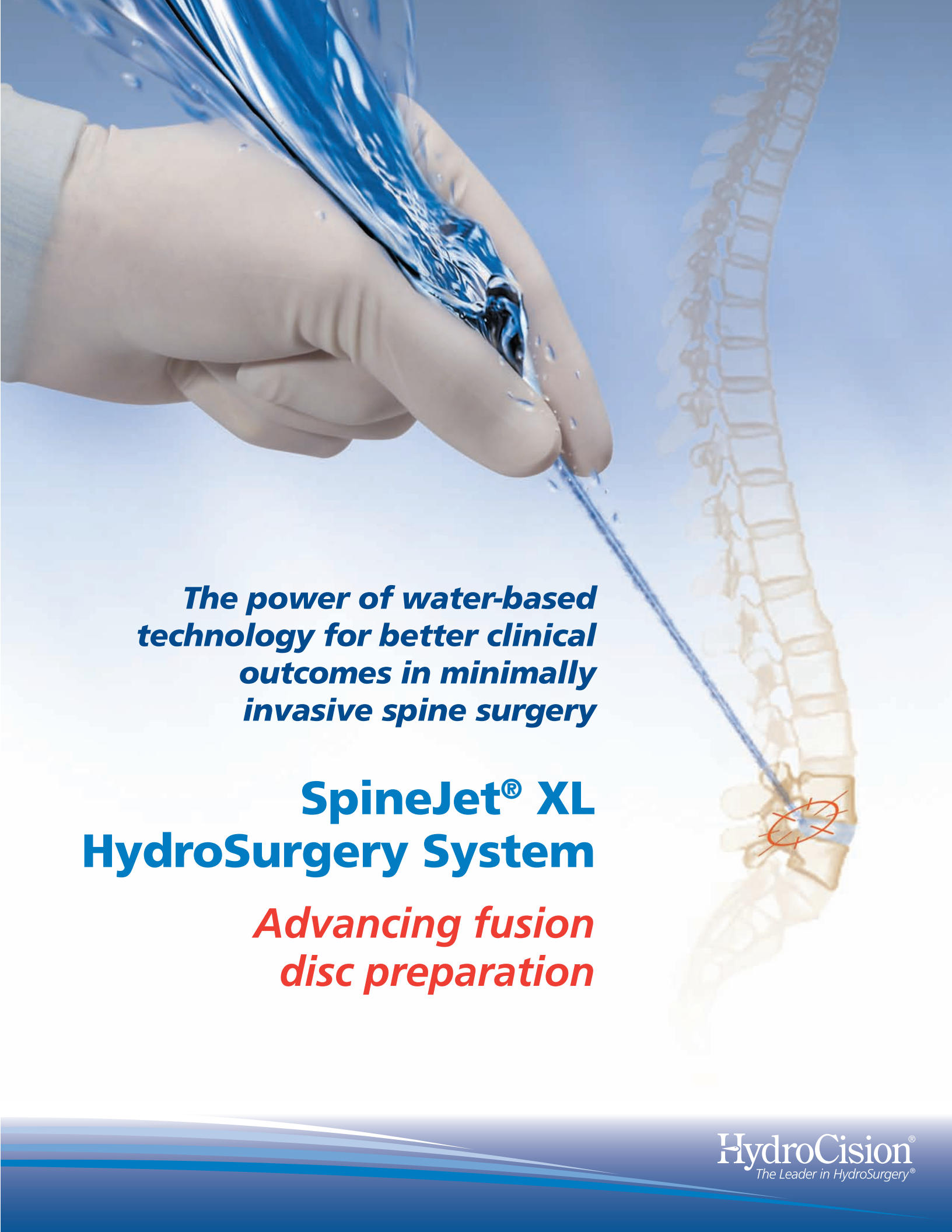
Also noted in the study, which appears online in the *Journal of Bone and Mineral Research,* was that patients who lived in a nursing home before their broken hip, or who had high levels of cognitive impairment did not receive a mortality benefit from the drug.

"We know it affects the immune system and inflammation, and both of those are important in fighting infection and cardiovascular disease," Colon-Emeric added. "It may be that the drug is changing the body's ability to fight off and recover from those illnesses." That idea will require confirmation in new studies.

Also participating in this study were Kenneth W. Lyles, M.D. and Carl F. Pieper, Dr.PH., Duke University Medical Center; Steven Boonen, M.D., Ph.D., Katholieke Universiteit Leuven, Belgium; Pierre Delmas, M.D., Ph.D., Claude Bernard University, Lyon, France; Jay Magaziner, Ph.D., University of Maryland; Peter Mesenbrink, Ph.D., of Novartis Pharmceuticals, NJ; and Erik F. Eriksen, M.D., DMsc, Novartis Pharma AG, Switzerland.

This study was partially funded by Novartis Pharmaceuticals. Drs. Colon-Emeric, Lyles, Magaziner, Pieper and Boonen are consultants for Novartis.

—EH (July 15, 2009)



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The Picture of Success: Dr. James Wittig

By Elizabeth Hofheinz, M.Ed., M.P.H.

If you Google "orthopedic oncology," he is the first surgeon you will see. Dr. James Wittig, Chief of Orthopedic Oncology and Sarcoma Surgery and Associate Professor of Orthopedic Surgery at Mount Sinai Medical Center in New York City, is one of only approximately 150 orthopedists in the U.S. who choose to tackle the bone and soft tissue cancers that threaten life and limb.

The son of a police officer, Jim Wittig grew up (not roaming the streets of) Paterson, New Jersey. "My parents were strict and strongly emphasized academics. My mom, a homemaker and hairdresser, took great care of me, as well as of my brother and sister. The family story goes that even at the age of three I was dragging a black bag around saying that I was going to be a doctor. Other family members and family friends basically patted me on the head with a 'Yes, dear' attitude. I turned out to be the first physician in the family."

Hands-On Academic Training

Majoring in biology at Seton Hall University, Jim Wittig reveled in understanding how the body works. "I began medical school in 1990 at the New York University School of Medicine, selecting this institution because of the chance to have plenty of hands on experience at Bellevue Hospital. As one of the local public teaching hospitals, Bellevue afforded residents and medical students, under the direction of attendings, the opportunity to spend a lot of time in the OR and directly caring for patients at the bedside."

During this time the talented Dr. Wittig entered the Alpha Omega Alpha Society and then became President of the local chapter. It didn't take long to find his calling. "Working closely with orthopedic residents in medical school allowed me to have a bird's eye view of the specialty. And I liked what I saw, namely that the patients came in with problems, you fixed them, and in most instances they were instantaneously better."

He then came to see the emotional power in limb sparing surgery. "I did my residency training at Columbia Presbyterian Medical Center, where I worked with pioneers in the field of orthopedic oncology. One of these was Dr. Ralph Marcove, who initiated limb sparing surgery for sarcomas. Another was Dr. Harold Dick, an early pioneer who taught me sophisticated surgical techniques and how to diagnose and care for pediatric and adult patients with sarcomas. It was astounding to see how many patients they had who were years out after surgery and would come back and visit. With orthopedic oncology I could see the enormous impact that one could have on people's lives. To preserve a leg or an arm, and to do so when patients are so afraid about their futures…words cannot express how powerful that is."

After winning an award for excellence in orthopedic surgery at Columbia, Dr. Wittig moved on to a two year orthopedic oncology fellowship in Washington, D.C. "I was fortunate to have exposure to a number of sites during this year, including the Washington Cancer Institute, Washington Hospital Center, Children's National Medical Center, National Cancer Institute and the Armed Forces Institute of Pathology. My primary mentor was Dr. Martin Malawer, who taught me nearly everything I know about the field. He and I developed a number of papers on removing tumors around the shoulder girdle, as well as reconstructing the shoulder girdle."

Dr. Wittig adds, "I found the shoulder girdle to be particularly challenging, not only because it is surrounded by significant muscular tissue, but also because most tumors grow in close proximity to it and compress the brachial plexus and blood vessels. The tumor has to be separated from the brachial plexus and vascular structures, the scapula and upper humerus have to be reconstructed and then covered over with muscle rotation flaps. Such work requires skills in vascular surgery, neurosurgery and plastic surgery in addition to orthopedic skills that I was capable of perfecting during my fellowship."

It was also during this time that he would be introduced to the government's health superstructure: the National Institutes of Health (NIH). Dr. Wittig: "Part of my fellowship role was acting as a sarcoma consultant for the NIH. I worked alongside physicians at the NIH who developed special protocols for treating pediatric patients with bone and soft tissue sarcomas. We developed protocols for patients with sarcomas who were in desperate situations where no other treatments were available anywhere in the country. They could come to the NIH, however, and undergo experimental treatments."

Leading the Field

Some doctors have to go looking for patients. *Un*fortunately, Dr. Wittig did not. "In 2001 I returned to New York, started a practice at NYU's Hospital for Joint Diseases, and started an orthopedic oncology clinic for indigent patients at Bellevue Hospital. There was an enormous need as the oncology clinic quickly began treating 80-100 patients a year…and I was the only doctor there."

Appointed the Director of the Sarcoma Section at the NYU Cancer Institute in 2005, Dr. Wittig quickly established an environment of cooperation. "I brought all the doctors together who were interested in sarcomas and addressed each patient's needs in a multidisciplinary fashion. We had a medical oncologist, pediatric oncologist, radiation oncologist, radiologists, musculoskeletal pathologists, and others. After a year in this position I was appointed Chief

of Orthopedic Oncology at Mount Sinai Medical Center, a fantastic place with a warm environment and an efficient team. Mount Sinai was among the top 20-25 institutions in NIH funding this past year for basic science research. This means we are able to effectuate a lot of collaboration between clinical and basic science researchers."

Those 149 or so other orthopedic oncologists in the country could very well be relying on Dr. Wittig for data in the future. "We are now developing a tumor bank and have 60 specimens at present. The tumors will be utilized for various molecular and translational scientific studies in order to develop new medications for sarcomas. Once the tumor bank reaches 100-120 specimens we will then begin to collaborate with oncological sciences at Mount Sinai to conduct biological studies. For example, we will study stem cells of sarcomas and see how they behave, their molecular mechanisms of actions and how they metastasize. If you have stem cells repopulating the tumors then they may not be eradicated with standard chemotherapy treatment; we want to figure out ways to manipulate the stem cells to eradicate them so that the tumors don't recur and do not metastasize."

A thoughtful maverick, Dr. Wittig performs surgeries that others will not or cannot, and he has perfected a surgical technique that has maximized outcomes and essentially eradicated complications. "One of the most interesting procedures I do is a total scapula replacement in which I remove the sarcoma arising from or involving the scapula and then reconstruct it with a metal replacement. This helps restore and retain elbow and hand functioning by restoring shoulder girdle stability. Many surgeons don't have expertise in this area and just remove the scapula and tumor and leave the arm hanging. Some of these patients find their way to my office. Unfortunately, some doctors tell patients things like, 'Scapula replacement is experimental and the research is unreliable.' One physician told me, 'I know it can work, but every time I've done it the scapula prosthesis dislocates from the chest wall.'"

Being in a sub-sub-niche specialty means that your colleagues often stand outside your circle, and wonder

what exactly you do. Dr. Wittig: "So many orthopedists choose a specialty because of what they are exposed to… and orthopedic oncology rotations are just not widely available. As for an area that is least understood by my colleagues, it is this: when limb sparing surgery can and can't be done. Orthopedists need to know that there are options for 95% of sarcoma patients when saving and reconstructing limbs. Often, patients are initially told, 'You have a sarcoma and you need an amputation.' And sometimes they are referred to other doctors like general surgeons who aren't orthopedic oncologists. This is a huge problem that must be addressed. To this end, I recently wrote a paper outlining the issue in *American Family Physician*."

All the rather masculine allusions to carpentry aside, in the end, orthopedists are just human. And they often reject oncology due to the emotionality. Dr. Wittig notes, "Another overt reason that there are so few people in my specialty is that many doctors don't want to—or can't—deal with the life and death aspects of oncology. It is wonderfully rewarding, however, to save a child and see that person grow older. It is very meaningful as well to relieve someone's pain whose life can't be saved. The patients and families are extraordinarily appreciative—and it's not as depressing of a field as you might think."

But it is heavy at times. An emotional job, coupled with living in bustling Manhattan, can make for a bit of stress. To get away, Dr. Wittig sojourns in a place with a pace much different than 'the city.' "Although I enjoy Manhattan, and love biking through Central Park, there is nothing like getting away to Italy. For the last three years I have visited Tuscany, tasted their flavorful wine and reveled in the relaxed atmosphere."

Dr. James Wittig…reaching out to patients and families, reaching forward for the next effective treatment.

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Robin R. Young, CFA
Editor and Publisher
robin@ryortho.com

Elizabeth Hofheinz, M.P.H., M.Ed.
Senior Writer
elizabeth@ryortho.com

Walter Eisner
Senior Writer
walter@ryortho.com

Tom Bishow
Vice President of Sales
tom@ryortho.com

Julia Cecil
Marketing & Promotions
julia@ryortho.com

Suzanne Kirchner
Production Manager
suzanne@ryortho.com

Jayme Johnson
Production Coordinator
jayme@ryortho.com

Eileen Mesi
Art Director / Designer
eileen@ryortho.com

Main Contact Information:
RRY Publications LLC
116 Ivywood Lane • Wayne, PA 19087
TOLL FREE: 1-877-817-6450
Fax: 610-260-6451