VOLUME 7, ISSUE 29 | SEPTEMBER 13, 2011

Orthopedics This Week

week in review

picture of success

breaking news

For all news that is ortho, read on.

Orthopedics This Week

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Orthopedic Power Rankings

Robin Young's Entirely Subjective Ordering of Public Orthopedic Companies

This Week: Who is going to buy Smith & Nephew? DePuy's (JNJ) successful bid for Synthes has changed the strategic algorithm among the Big Diversified Orthopedic Companies. Smith, Nephew & Stryker—kind of sounds like a law firm. Maybe a new band (like Crosby, Stills & Nash). Anyway, consolidation is most assuredly in the air.

Rank	Last Week	Company	TTM Op Margin	30-Day Price Change	Comment
1	2	Zimmer	27.75%	4.55%	Now the least expensive (by three measures) orthopedic company in the universe and the new #1.
2	1	Kensey Nash	34.24	(1.73)	Is KNSY's buying streak done for now? Next comes integration. Market appears to be assuming that management will take a breather.
3	5	Medtronic	28.63	9.77	The Street clearly likes new CEO. Even with all the recent bad press, buyers are returning to MDT. Leadership is why.
4	4	Johnson & Johnson	26.33	6.66	With its growing dividend, the good ship JNJ is steady as she goes in a stormy market. But valuation is not as attractive as it once was.
5	3	Stryker	25.23	1.82	With $18 billion market cap and $2.5 billion in cash, SYK would have to lever up to buy SNN. Yes, debt is cheap, but unpopular.
6	7	Wright Medical	8.76	1.88	Most analysts are expecting WMGI to post 3.50% sales growth this quarter. Will they also be able to announce a new CEO?
7	8	Smith & Nephew	22.8	11.19	Rumors of a buy-out are fueling double-digit stock price growth. Could it be true? We'd put the odds at 50/50.
8	6	Orthofix	14.72	(7.35)	We have tremendous confidence in new CEO Vaters, but the Street is taking its time to get comfortable.
9	9	Conmed	9.65	0.65	Most analysts are expecting declining profit margins in Q3 but slightly higher sales growth. We think Corasanti can probably beat that.
10	10	Symmetry	7.64	(2.19)	Olsen buyout done. But tough environment right now and the Street is clearly nervous. Looking for 5% decline in sales this quarter.

Robin Young's Orthopedic Universe

Top Performers Last 30 Days

	Company	Symbol	Price	Mkt Cap	30-Day Chg
1	MAKO Surgical	MAKO	$35.43	$1,468	33.15%
2	Smith & Nephew	SNN	$46.89	$8,372	11.19%
3	Medtronic	MDT	$33.38	$35,249	9.77%
4	Johnson & Johnson	JNJ	$63.64	174,396	6.66%
5	Zimmer Holdings	ZMH	$53.82	$10,251	4.55%
6	Wright Medical	WMGI	$14.07	$554	1.88%
7	Stryker	SYK	$46.88	$18,205	1.82%
8	RTI Biologics Inc	RTIX	$3.17	$175	1.60%
9	TiGenix	TIG.BR	$0.96	$87	0.75%
10	Conmed	CNMD	$21.82	$623	0.65%

Worst Performers Last 30 Days

	Company	Symbol	Price	Mkt Cap	30-Day Chg
1	Exactech	EXAC	$13.11	$172	-14.76%
2	Tornier N.V.	TRNX	$20.20	$791	-11.40%
3	Orthofix	OFIX	$34.01	$626	-7.35%
4	TranS1	TSON	$3.99	$84	-7.21%
5	Synthes	SYST.VX	$164.52	$19,541	-7.08%
6	NuVasive	NUVA	$20.95	$836	-6.56%
7	Integra LifeSciences	IART	$36.19	$996	-5.24%
8	Bacterin Intl Holdings	BONE	$1.81	$72	-2.69%
9	CryoLife	CRY	$4.83	$136	-2.62%
10	Symmetry Medical	SMA	$7.59	$276	-2.19%

Lowest Price / Earnings Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	P/E
1	Medtronic	MDT	$33.38	$35,249	10.15
2	Zimmer Holdings	ZMH	$53.82	$10,251	11.60
3	Johnson & Johnson	JNJ	$63.64	$174,396	13.01
4	Stryker	SYK	$46.88	$18,205	13.32
5	Smith & Nephew	SNN	$46.89	$8,372	13.61

Highest Price / Earnings Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	P/E
1	NuVasive	NUVA	$20.95	$836	26.19
2	Synthes	SYST.VX	$164.52	$19,541	20.82
3	ArthroCare	ARTC	$29.56	$811	20.67
4	Wright Medical	WMGI	$14.07	$554	20.10
5	Exactech	EXAC	$13.11	$172	17.25

Lowest P/E to Growth Ratio (Earnings Estimates)

	Company	Symbol	Price	Mkt Cap	PEG
1	Integra LifeSciences	IART	$36.19	$996	0.82
2	Orthofix	OFIX	$34.01	$626	0.82
3	Kensey Nash	KNSY	$25.61	$218	1.09
4	Medtronic	MDT	$33.38	$35,249	1.12
5	Zimmer Holdings	ZMH	$53.82	$10,251	1.21

Highest P/E to Growth Ratio (Earnings Estimates)

	Company	Symbol	Price	Mkt Cap	PEG
1	ArthroCare	ARTC	$29.56	$811	3.45
2	Johnson & Johnson	JNJ	$63.64	174,396	2.33
3	CryoLife	CRY	$4.83	$136	2.03
4	Symmetry Medical	SMA	$7.59	$276	1.72
5	Wright Medical	WMGI	$14.07	$554	1.55

Lowest Price to Sales Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	PSR
1	Symmetry Medical	SMA	$7.59	$276	0.76
2	Conmed	CNMD	$21.82	$623	0.87
3	Exactech	EXAC	$13.11	$172	0.90
4	RTI Biologics Inc	RTIX	$3.17	$175	1.05
5	Wright Medical	WMGI	$14.07	$554	1.07

Highest Price to Sales Ratio (TTM)

	Company	Symbol	Price	Mkt Cap	PSR
1	TiGenix	TIG.BR	$0.96	$87	140.55
2	MAKO Surgical	MAKO	$35.43	$1,468	33.15
3	Synthes	SYST.VX	$164.52	$19,541	5.30
4	Tornier N.V.	TRNX	$20.20	$791	3.48
5	TranS1	TSON	$3.99	$84	3.20

PSR: Aggregate current market capitalization divided by aggregate sales and the calculation excluded the companies for which sales figures are not available.

Under Carragee The Spine Journal Lives Dangerously

By Robin Young

Wikimedia Commons and CHE010

The Spine Journal's (TSJ) recent review of 13 rhBMP-2 studies, (June 2011, The Year of Living Dangerously) has pulled the publication into a morass of methodological errors and unapologetic bias. In short, living dangerously. While our list of errors and apparent bias is by no means exhaustive, it is large enough to create a growing sense of deep unease.

With Eugene J. Carragee M.D., Editor in Chief of *TSJ* and a member of the faculty at Stanford's University School of Medicine leading the way, the entire June issue of the publication was dedicated to a critical review of a group of early studies of rhBMP-2. After the review, the editors not only repudiated those studies, but linked payments to the authors of those studies from the study's sponsor, Medtronic, Inc. as the explanation for the alleged flaws. Carragee and his fellow authors then embarked on an aggressive PR campaign to convince regulators, CMS, and the general public that both patients and physicians who used rhBMP-2 had been "living dangerously" over the past couple of decades.

When we reviewed Carragee's study, we, however, discovered a number of deeply troubling mistakes, omissions, and what appears to us to have been a systematic pattern of intellectual dishonesty.

There are three specific areas which cause us the most concern:

1. Omissions of facts which had the potential to change the conclusions of *TSJ*'s study.
2. Data used out of context.
3. Errors in logic which, in turn, impugned the integrity of dozens of researchers. This, in our view, created a clear appearance of intellectual dishonesty.

Yale University Review

Yale University has launched an independent and highly detailed review of the entire body of studies regarding rhBMP-2, including the studies which were critically reviewed by *TSJ*.

Based on our own limited review, we believe the Yale University study has the potential to (embarrassingly for the editors, authors, and organization supporting *TSJ*), reverse many, perhaps a majority of the conclusions that were reached by Carragee et al.

How could this happen? We believe it is because, under Carragee's leadership, *TSJ* descended into advocacy journalism to promote a particular point of view and engaged in the three areas we mention above and below.

Omission of facts

We have two examples.

In the Carragee et al.'s study titled, *A critical review of recombinant human bone morphogenic protein-2 trials in spine surgery: emerging safety concerns and lessons learned*, the authors presented two tables (one on page 473 and the other on page 488) which listed each of the 13 studies which they said were flawed. Specifically with regard to the 2006 Dimar et al. study, *TSJ* stated that there were no adverse events reported. The exact words used by Carragee et al. were, "none reported." Below we have copied and pasted a table from the Dimar study that specifically lists complications.

Medscapes www.medscape.com

Complication	Number of Subjects With Complication: rhBMP-2/Compression Resistant Matrix	Number of Subjects With Complication: Iliac Crest Bone Graft
Gastrointestinal	9	10
Traumas	14	9
Cardio/vascular	9	6
Urogenital	6	6
Dural tears	3	5
Nonsurgical infections	6	4
Malpositioned implants	0	3
Surgical infections	0	1
Nonunions	0	2
Respiratory	0	1
Vertebral fractures	0	1
Others	14	17

Source: Spine © 2006 Lippincott Williams & Wilkins

Here is a section of the table on Page 473 of the Carragee study which mentions the Dimar study.

Table 1
Original industry-sponsored rhBMP-2 clinical studies and reported adverse event rates because of rhBMP-2

Authors	rhBMP-2 Placement	rhBMP-2,n	rhBMP-2 Adverse Events (%)	Author's Observation
Dimar et al.	Posterolateral (lumbar, INFUSE, pedicle screws)	53	0	None reported

Source: CarrageeStudy

Here is a section of the table on Page 488 of the Carragee study which also mentions the Dimar study.

Application	Industry-sponsored original assessment of rhBMP-2-associated adverse events
Posterolateral fusion with rhBMP-2	Dimar et al. 2006: none reported

Source: Carragee Study

OTW emailed Dr. Carragee and asked him about the Dimar study and the list of complications that were, in fact, in the study. Here is his response:

"We never stated that the authors did not report any complications at all, we stated specifically and explicitly that the authors did not attribute any complication whatsoever to rhBMP-2."

Actually, in our reading of his article he actually DID state that Dimar did not report any complications at all. What does "none reported" mean? Furthermore, if you look at the table from the Dimar study, the heading over the column says "rhBMP-2" and the other column heading says "complication."

The second example concerns the first study listed in the table—the Boden et al. study (*The Spine Journal 11 (2011) 471–491 475 study with an instrumented ICBG arm, a non-instrumented rhBMP-2 arm, and an instrumented rhBMP-2 arm*).

In 2002, Drs. Scott Boden, James Kang, Harvinder Sandhu, and John Heller published the results of a study using rhBMP-2 titled, *Use of Recombinant Human Bone Morphogenetic Protein-2 to Achieve Posterolateral Lumbar Spine Fusion in Humans*. The purpose of the study was to see if the carrier which was used successfully in rhesus monkeys could induce consistent radiographic spine fusion in humans.

There were three arms to the study:

1. rhBMP-2 ***with*** instruments
2. Iliac crest bone graft (ICBG) ***with*** instruments
3. rhBMP-2 ***without*** instruments

In Carragee's review of the Boden study, apparently there were only two arms—the rhBMP-2 with instruments and the ICBG with instruments. Carragee's conclusions after critically reviewing two of Boden's three arms of the study were that "there was some indication of possible adverse events associated with rhBMP-2" and that "such an effect

might have been related to the known pro-inflammatory properties of rhBMP-2."

Sure enough, one of the patients in the Boden et al. study had leg pain. One patient.

Could that be, as Carragee suggests, from rhBMP-2?

That's why Boden used the third arm of the study. That third arm was rhBMP-2 alone. There are many potential causes of post-operative leg pain (or inflammation for that matter) following spine fusion surgery.

How does a researcher eliminate variables so that the product being tested, in this case rhBMP-2, is either confirmed or eliminated as the cause of the inflammation?

Of course, use rhBMP-2 alone and see if those patients showed any signs of inflammation. The third arm, in other words.

So what did Carragee say about the third arm? He said nothing. Radio silence.

And did the patients in the third arm of the study, the rhBMP-2 arm, show any signs of inflammation? No they did not. In fact, in the Boden study, four times as many patients received rhBMP as had their bone harvested from the iliac crest. That means four times the chances for inflammation.

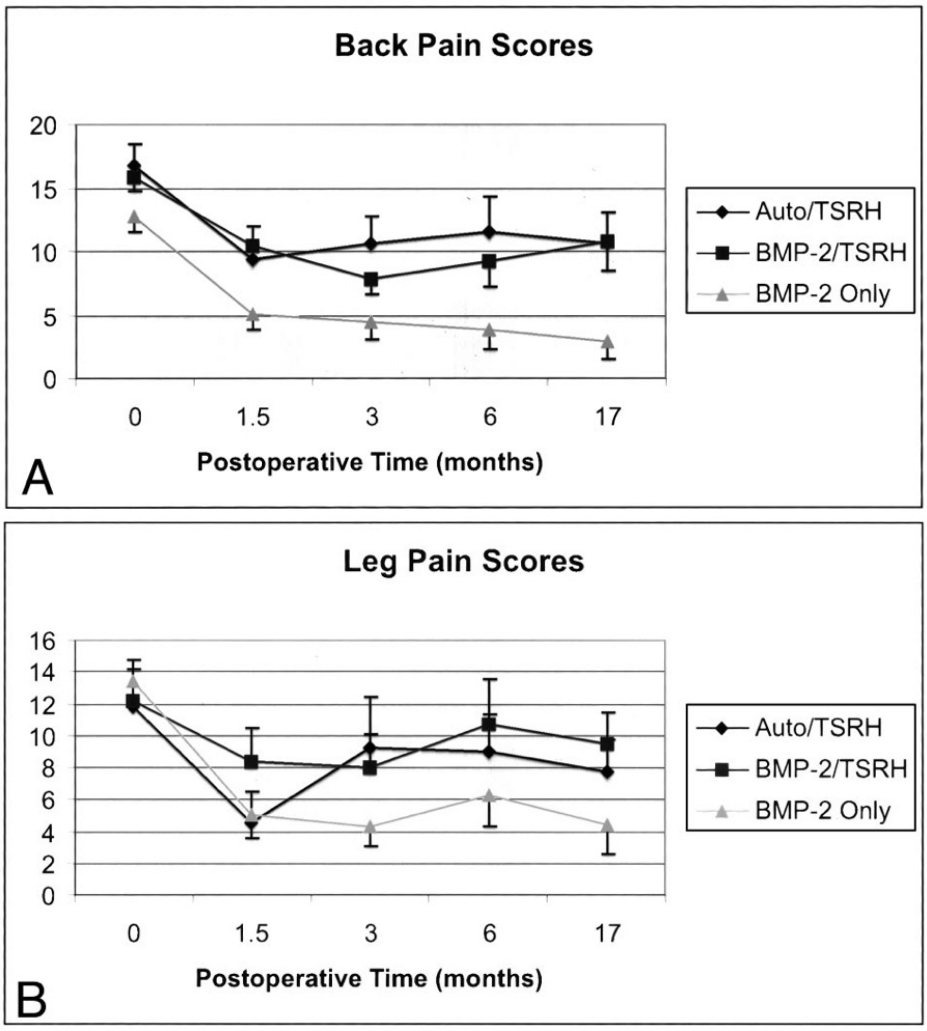
Here is a direct quote from page 2667 of the Boden study (which, by the way, was the Volvo Award winning paper in 2002):

"The decreases (improvement) in the leg pain score at the most recent follow-up assessment, as compared with preoperative values, **were statistically significant only for the BMP-2 only group (-9.9 +/- 1.9: p=0.001)**, and the differences among groups were statistically significant (p=0.042). In the autograft/TSRH group, the mean bone graft donor site pain score decreased from 16.0 +/- 0.7 at the time of hospital to 5.2 +/- 2.3 at the most recent follow-up assessment."

Here we reproduce two tables from the Boden study. The tables clearly show that the rhBMP-2 only patients registered LESS back and leg pain. Where is the rhBMP-2 induced inflammation?

Let us repeat the key point in that last paragraph. Leg pain, (the exact issue that Carragee claimed was likely due to rhBMP-2 triggered inflammation) was LOWER in the patients with rhBMP-2 **only.**

Had Carragee included the third arm, the rhBMP-2 only arm, in his study, the data would not have supported his conclusions. Amazingly, Carragee omitted this clearly material data from his study.



Source: Boden Study

The bar charts Carragee used in his study for the Boden study show only two bars. One bar for the ICBG/TSRH

patients and one bar for the rhBMP-2/TSRH patients. The third bar is missing.

Why?

Data Used Out of Context

When a researcher uses data out of context, does that qualify as methodological error?

One of the most dramatic data points used in the Carragee study was the list of payments made to authors of the 13 studies under review. The total amounts were astonishing. To quote from Carragee's study, "Authors of nearly all the studies had financial ties with the manufacturer of rhBMP-2, with various compensations ranging to more than 26 million dollars/study."

$26 million per study?

We checked the numbers. Turns out that Carragee's characterization is wrong. In fact, it is entirely false.

To arrive at $26 million, Carragee and his co-authors looked up ANY payment made for ANY thing at ANY time over the course of 15 years—which of course was about 90% of the time AFTER the studies in question were conducted and published. **In short, virtually all of the $26 million was NOT tied to the studies.**

We called Dr. Boden and asked about the payments. "I didn't get paid anything by Medtronic to do the study," he told us. But Carragee listed in a table the number of $21 million beside your study. According to Boden, he figured his salary from his institution (not Medtronic) was his pay for conducting the study. We also heard (not from Boden) that he had REFUSED stock-based compensation prior to and after conducting this study. To be fair, when Boden visited Medtronic headquarters as a consultant, he did charge an hourly consultant's fee. But nothing, nada, zip for conducting the study. He also received payments (many years after that study) for intellectual property

licensed to Medtronic NOT related to either the subject of the study or the current InFuse product.

How big a methodological error is it to count data from ANY source applied to the research subject for ANY reason over the course of 15 years as the cause for a particular two-year effect (the rhBMP studies often followed their subjects over two years)?

Instead of U.S. dollars, what if the item being measured was doses of a new drug? What peer review journal would have accepted such clearly specious logic as the basis for ANY conclusions about such a drug?

WE would have thought that the answer would be "none," until we read and double checked the June 2011 issue of *TSJ*.

Intellectual Dishonesty

In the two studies we reviewed, we found material information that had been omitted from the Carragee study and gives the strong appearance of intellectual dishonesty. Accusing the authors of, in effect, spinning the results of their studies for pay from Medtronic, which Carragee and his co-authors are clearly doing, is a serious charge.

That charge impugns the integrity of each and every individual researcher whose name is associated with those studies.

But, when individual authors are examined at the time these studies were conducted, a very different picture emerges, as we saw with Boden.

TSJ and the authors of the June 2011 issue engaged, we believe, in advocacy journalism which created the appearance if not the fact of intellectual dishonesty. The expanding body of evidence includes, but is not limited to, omitting material information which would have changed the study's conclusions as well as failing to apply standard and appropriate standards of research to the question of financial ties to the supplier of rhBMP-2 and the real issue of bias.

Bottom line, we think that Carragee et al are guilty of pulling *The Spine Journal* into a morass of methodological errors and unapologetic bias. In short, living dangerously. ◆

Orthopedics This Week

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Top Ten FDA Orthopedic Initiatives

By Walter Eisner

Wikimedi Commons and Gnarlycraig

What are the top ten FDA regulatory initiatives from the FDA that will affect the orthopedics industry, surgeons and hospitals this year and beyond?

Ralph Hall

Ralph Hall, a professor of law at the University of Minnesota and counsel for Baker & Daniels answered that question before a packed house of medical device manufacturers at a Minnesota LifeScience Alley meeting on August 31.

Hall said there is currently "more action than ever" at the FDA. He cites pressure from consumer groups who point to DePuy's ASR hip recall as an example of what the FDA's interprets as lax oversight.

He notes the recently released Institute of Medicine (IOM) recommendation to scrap the 510(k) system has the potential to be used by consumer groups to call for tighter regulations. While the

recommendations, Hall pointed out that some physicians, speaking through the *New England Journal of Medicine*, have come out in support of the IOM recommendations.

Within this broad context of the condition of the U.S. device regulatory environment, Hall outlined key FDA CDRH (Center for Devices and Radiologic Health) initiatives that should keep device manufacturers and providers awake at night over the next few months. We identified what we thought were the top ten important items for the orthopedics community.

10 Notice to Industry SOP (Standard Operating Procedures)

The FDA wants to provide faster communication of new "requirements" and new scientific thinking. According to Hall, the agency wants to "level the playing field," and help orthopedic manufacturers adapt faster to the vicissitudes of the FDA's thinking and to provide more agency action predictability.

9 Chemical Guidance

This little known guidance, according to Hall, has been under the radar and deals with complex, philosophical questions in differentiating drugs and devices. An expansive definition **will push more products into the drug regulatory system**, says Hall.

The draft seeks to define "chemical reactions" that mediate a bodily response at the cellular or molecular level, or combines with or modifies an entity in a way that affects that entity's interaction with the body, as the "formation or breaking of covalent or ionic bonds."

Hall says that while many devices are purely mechanical and are not affected, it is innovative therapies that will be at greatest risk. He cites electrical pulse, cautery and ablation, cold and radiation products as examples.

8 Mobile Medical Applications

This topic includes direct medical applications through the use of a mobile device or applications as an accessory to other products. Examples include remote displays of data from bedside monitors, patient screening tools, and wireless remote controls for devices. Excluded are electronic health records, general health and wellness applications, and books, articles and other teaching materials.

"This will **pull the Silicon Valley developer into the FDA**," said Hall. The FDA is attempting to determine the appropriate regulatory classification for the devices and whether or not the device is "medical" or not. The guidance was issued on July 21. A public workshop will take place September 21-22 and final comments are due October 19.

7 Clinical Trial Guidance

The purpose of the guidance is to assist in the design of pivotal studies. The guidance excludes feasibility and post-market studies.

Hall says that some general factors for consideration for the studies include: population diversity, variable device performance, availability of alternative therapies, intended uses and bias, and variability. The guidance is linked to the risk/benefit draft guidance and discusses least burdensome concepts.

Hall emphasizes that the guidance **strongly encourages randomized studies**, prefers concurrent controls compares risks with non-comparative or observations studies.

6 RUO/IUO Guidance (Research Use Only/Investigational Use Only)

For decades, says Hall, "intended use" has been based on the "objective intent" of the manufacturer. This proposed

guidance changes that presumption to a **"reason to know test for intended uses."** Such a change can have a major impact on off-label use and company risk, according to Hall.

For example, a company would not be able to sell the device to a research university if the company has "reason to know" that the product will be used off-label in research. Under this guidance, unsolicited third-party actions can be attributed to the manufacturer.

Other questions raised include what happens if a hospital uses a product off-label 5% of the time and tells the sales rep? What if a competitor tells your sales rep that the customer was using the product off-label? Could you still sell it?

5 Clinical Investigator Monitoring

Hall says sponsors should preplan monitoring programs that encourage **central monitoring** instead of relying completely on on-site monitoring. Sponsors should identify critical monitoring points, activities and data and review policies and procedures as well as actual implementation.

The FDA's goal in issuing this part of the guidance is to try to improve human clinical study subject protection and data quality. In the draft guidance document, the FDA called for using risk-based monitoring but they didn't ask for 100% verification.

4 Risk Benefit Guidance

The guidance, according to Hall, lets the nose of the **comparative effectiveness** camel under the tent. It recognizes different types of clinical data, but, according to Hall, seems to prefer randomized clinical studies and data over other types of clinical studies and data.

Various effectiveness and safety measures with intended use are considered. Such measures include: type, magnitude, probability and duration of benefits, and adverse events. Additional factors include: patient tolerance for risk and availability of alternative therapies.

Hall questions whether the FDA should be making patient risk tolerance decisions. "Isn't that the practice of medicine?" he asked.

3 522 Postmarket Surveillance Studies

On May 6, 2011, the FDA sent out letters ordering 21 makers of metal-on-metal hips to submit plans for conducting postmarket studies on patients who have received the device. The agency wanted to know whether or not the implants are shedding high levels of metallic debris into patients.

The agency is now looking at ways 522s are triggered and the process for assurance compliance.

DePuy

Hall said pressure for tightening up the 522 surveillance system is partly due to high profile recalls. In his opinion, medical device manufacturers have failed to complete postmarket studies promised during the approval process. He noted that new **interim reports may be required** and committed to as part of the approval process. Studies can range from randomized clinical studies to active surveillance to bench tests.

2 510(k) Device Modifications Submissions

There is a new statutory obligation which requires manufacturers to submit a new 510(k) on a previously cleared device if a change to that device has been made that **"could SIGNIFICANTLY affect safety and effectiveness."** The agency issued draft guidance for manufacturers to use in these cases.

In Hall's view, the FDA guidance will have an effect on manufacturing process changes, suppliers, software changes and upgrades, labeling and packaging.

Here are five specifics that each orthopedic manufacturer should ask themselves about their existing, already cleared 510(k) devices:

Manufacturing – Was the manufacturing process information in the original 510(k)? If so, Hall says a submission is likely needed. Most packaging changes will not need a 510(k). However, use of methods or protocols not in the original 510(k) to confirm package integrity will probably trigger a submission.

If the manufacturer is changing from a non-sterile to sterile device, a submission will be required.

Labeling - Almost all changes to indications for use will need to be submitted. Removal of intended uses or indications for use for purely marketing reasons will not need a submission.

Contraindications - All new/modified contraindications must be submitted. Adding a contraindication prior to FDA clearance will render the product adulterated and misbranded. He cautioned manufacturers that tripping on this issue can subject them to False Claims risks, contract violations with customers and removal of the protection of "preemption" from product liability suits in state courts. A submission will also be required if a contraindication is removed.

Use Changes – Changes in possible off-label use may require a change. For example, a modification that COULD create a reasonable likelihood of off-label use would require a submission. The intended use promoted by the manufacturer is not relevant if there is that "reason-

able likelihood" of off-label use. As an example he cited lengthening surgical scissors so that they could now be used in an endoscopic procedure. That would need a submission, even if labeling is not changed.

Submissions will be required if changes to the device allow new, expanded or more specific patient populations. Modifications that can alter an established medical procedure will also require a submission.

Materials - Changes to materials that "directly or indirectly" contact patient may need a 510(k). Hall says this category has the ASR hip problem written all over it. Changes in surface or surface preparation, such as changing from surface blasting to acid-etching will need a submission.

Use of Clinical Data - If clinical data is needed to assess the change because bench testing or simulations are not sufficient, then a submission will be required. Paradoxically, Hall says this will serve as a disincentive to use clinical data. For instance, a manufacturer who discovers that engineers seeking to be extra thorough with a device modification by checking on clinical data may inadvertently trigger a submission even if the clinical data was not needed.

And the number one FDA initiative that should keep you awake at night is:

Jeff Shuren, M.D., CDRH Director

1 510(k) Reform Activities

Over the coming 60 days the FDA will react to the IOM report and probably decide how to proceed with seven "contentious" issues identified by the FDA's 510(k) reform plan earlier in the year.

In Hall's opinion, the "radical" IOM report will give CDRH's director, Jeff Shuren, M.D., room to look like the grown up on the reform effort.

When Hall looks at the FDA today, he sees a **pattern of increasing regulatory activity** in such areas as clinical data, 510(k) eligibility, off-label scrutiny and an increasing reliance on data, information, submissions and control. The FDA, he thinks, will continue to expand its attempts at being transparent and to centralize much of the CDRH decision making through the Science Council.

Strap yourselves in and pay attention. There's more action than ever. ◆

Reporter's Notebook

By Elizabeth Hofheinz, M.P.H.

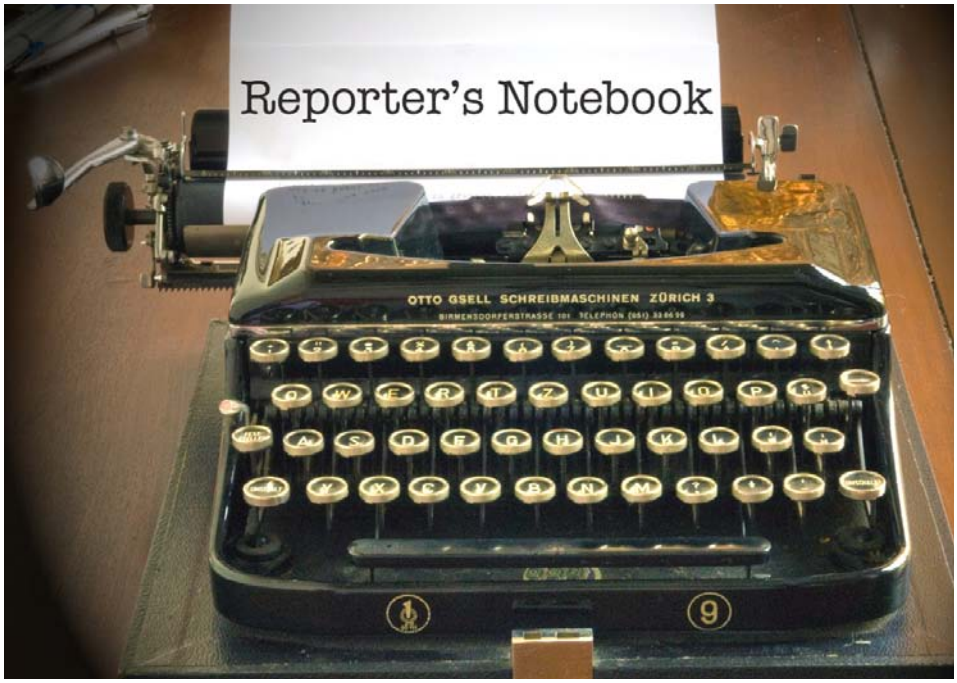
Dear *OTW* Reader:

Big theme this week…U.S. losing talent and innovation?

A concerned spine surgeon tells *OTW*, "We are losing our edge to foreign countries. The Chinese in particular have a tremendous knowledge base and a great thirst for more education. It used to be that Chinese surgeons came here to learn, but in the next ten years we'll be going over there to learn from them. They are a hard driving group… the type of surgeons I used to see here."

FDA "moving" companies to Europe? A reimbursement consultant tells *OTW*, "Startups are not going public anymore because of all the reimbursement and regulatory hurdles. One company I worked with was never was able get FDA approval to begin an IDE; they starting booming in Europe and have abandoned any thoughts of the U.S. market. *My clients are leaving the country and that is a sad statement for the future of American innovation. Soon we will have to hop on a plane to access new technology."*

Pity for American orthopedists? *OTW* hears from an engineer: "Korea, Japan, and China have got some sexy innovation going on—they are developing their own implants and designs, and are expanding on fusion devices. As for our friends just on the other side of the pond, a European surgeon recently said to me, *'You guys are in the beginning of motion preservation implants. I feel sorry for you because by the time you get them cleared we've already figured out that they're obsolete.'"*



Wikimedia Commons

And on a somewhat less ominous note…

Christopher Bono, M.D., chief of spine at Brigham and Women's Hospital, is the Deputy Editor of the *Spine Journal*. He tells *OTW*, "Medtronic's decision to give Yale funding to examine its data is a step in the right direction. What remains to be seen is how the conclusions of that investigation are going to match up with those from the *Spine Journal*. I would guess that this process is going to take approximately eight months to complete. *Overall, I truly feel bad for all parties involved.* It's not good for patients if there was an increased risk of complications, and I know it must be upsetting for the researchers who thought they were in the right, and who are getting attacked."

Too many trauma surgeons? Jeffrey Anglen, M.D., Professor and Chairman of Orthopaedics at the University of Indiana University School of Medicine tells *OTW*, "There are so many people going into trauma now that there are not enough high level trauma cases for young surgeons to get good at it. Many believe that, due to several factors, *they are coming out of fellowships less well trained and independent than in the past…coming into their first job not ready for prime time.* Anecdotally, some of these surgeons have to start in a mentorship situation where they scrub

in with the senior partner for a period of time, rather than being independent from day one. Also, in the past, high energy trauma patients were routinely transferred to level one centers, where experience could be accumulated and skills sharpened. Now, many believe they are staying in level two and three centers where young trauma surgeons have been hired, and trauma fellows at level one centers are doing fewer cases, as few as a half dozen or less pelvic fractures during their year…of course this affects their learning experience."

Circle the wagons, says a sports medicine specialist…it's Frontier Days. This private practitioner tells *OTW*, "More than 50% of new surgeons are joining hospital systems now. Doctors are teased by the good economics of the first few years, but then realize how much they are beholden to the institution. And things are so uncertain with regard to hospital models and the accountable care organizations (ACOs) that are being tried out…three of the hospitals doing these on a trial basis actually pulled out because the model didn't work. *I do not see ACOs succeeding; good luck getting all the hospitals and private practices to agree on common goals. People in this country are still very independent, and have a frontier mentality. We are not Europeans, and are not accustomed to monarchies and dictatorships.*"

An orthopedist dedicated to data collection tells *OTW*, "One of the problems with ACOs is that orthopedic surgeons themselves are bad at documenting results. Medicare began making us do it then some of my orthopedist colleagues complained about how it was being done. The fact is that we dropped the ball; doctors are so fragmented that unless they are part of a hospital they are not going to keep data. *Going forward hospitals will be paid by insurance companies…instead of orthopedists billing the insurance companies, the insurers will pay the hospitals then let the hospitals hire the doctors getting the best results for the least amount of money*. But what do the hospitals use for outcomes? We're not even sure of that."

An industry watcher tells *OTW*, "Spine is overloaded…figuratively and literally. The field is beset by ankle biters; in some cases it is Korean imports that are taking away market share from existing manufacturers. These offshore players are teaming up with local distributors who can negotiate better deals. *Spine may be imploding because it is so diversified.* The question is whether it

makes any difference as far as patient outcomes. In 1994 the spine industry in the U.S. was $225 million (U.S. sales of spine devices sold to hospitals), by 2009 it was $7 billion, a 31-fold increase. In 1994, in the U.S., there were about 260,000 fusions; in 2009 there were about 445,000 fusions, a 1.7-fold increase. *My feeling is that we're trying to stuff more and more gizmos between those poor vertebrae.*"

Elbowing out hips and knees… an orthopedic surgeon tells OTW, "Arthrex, which recently purchased Tardo Medical, is now going to expand into hip and knee replacement. This has some of the larger companies concerned because Arthrex has a strong distribution network and a substantial network of sales reps with close ties to a plethora of doctors. The average community doctor may have a longstanding relationship with an Arthrex rep, who will now be showing up with a host of total joint products. *The 'Big Five' hip and knee manufacturers are sweating.*"

Peter J. Millett, M.D., M.Sc., Director of Shoulder Surgery at the Steadman Clinic, in Vail, Colorado tells *OTW*, "I am concerned about how cost containment will affect the process of innovation. We saw big changes in pharma with the introduction of generic drugs—the same thing is going to happen with orthopedics. Products are becoming more commoditized and this could lead to less innovation. *At this point, it is becoming harder to make improvements in procedures and devices as the orthopedic community has figured out what works well in so many cases.* Thus, certain procedures and devices may be targeted for cost cutting. Physicians need to be involved—accountable care organizations and generic medical device manufacturers are two market-driven responses. Institutions such as ours—which are known for innovation—must be engaged in the process or we, as orthopedic surgeons and physicians, will lose our autonomy in decision-making."

"We are at socialized medicine," says a worried spine surgeon. He tells *OTW*, "Insurance companies are denying surgeries left, right, and center—and for NO reason. They are finding some excuse or another, i.e., 'Things weren't documented exactly right,' or 'The request was not filed properly.' *In the end, only 30% of my patients who need surgery are approved.* What a great way for the insurers to save money. And the patients, well, they are not being treated. This is no different than what happens in socialized medicine."

MI surgery-challenging learning curve, says Bill Horton, M.D., Professor Emeritus of Orthopaedic Surgery at Emory University. He tells *OTW*, "While certain minimally invasive (MI) surgeries may be less morbid for patients, the fact is that there is a very significant learning curve involved. *And the outcomes of MI techniques are greatly affected by where the doctor is on that learning curve. We need to tease that out, and figure out what other measures can shorten the learning curve.* How can we best disseminate these techniques while protecting patients? Ideally, we would engage in the robust development of meaningful simulation environments and virtual proctoring. Everybody knows this but we're not doing as much about it as we might…in some ways, we're still training surgeons like we did 50 years ago."

"Insurance companies are killing our profession," says Mark Reiley, M.D., the inventor of kyphoplasty. He tells *OTW*, "Though insurance companies always say they are trying to keep medical costs down, in fact, rates for patients keep rising and medical pay keeps falling." '**Find any article, anywhere, doesn't matter if it's in the Journal of Bulgarian Nursing, find some paper that reflects negatively on this surgical procedure the docs want to do, so we can deny it**.' Dr. Reiley says, "The above is an actual quote from an insurance employee, who is now quitting because after five years of dealing with people completely bereft of ethics, he decided he 'couldn't swim in the same sewer as these insurance companies.' "Our biggest problem as physicians is not the competition down the street, it's how to get out from under the insurance companies. There must be someone in the medical field with the leadership skills, and no personal ax to grind, that can pull the docs together to solve this issue. After all, *if it weren't for doctors the insurance companies would not exist."* ◆

company

Traders Spur Smith & Nephew Takeover Rumors TABLE

Not only did Smith & Nephew (S&N) win the knee battle in the second quarter, but London traders drove up the company's stock price after another rumor popped up on August 31 about the company being a takeover target by Stryker Corp., Johnson & Johnson (J&J) and Biomet, Inc. S&N's market value is about $9 billion.

In London, *The Independent* reported that Stryker may offer up to $13 billion for the company. *The Daily Mail* said Biomet's Wall Street ownership group may bid the same amount, citing "hot gossip" among traders.

Wikimedia.org

In December, rumors spread that a private U.S. equity group (Biomet's Wall Street owners, Blackstone Group LP, KKR & Co., TPG and the buyout arm of Goldman Sachs Group Inc.) and J&J were involved in talks to acquire the company. J&J eventually made a deal to buy Synthes and the Wall Street group reportedly backed out after rumors of potential talks with S&N were made public. Biomet is highly leveraged and has recently been losing market share in both hips and knees.

Worldwide Hip Market - 2Q 2011			
	% Gain	Market Share	Sales ($ in millions)
Stryker	0.9	22.4%	$312
Zimmer	0.5	24.7%	$345
Smith & Nephew	0.3	13.0%	$181
Other	0	1.9%	$26
Wright Medical	-0.1	3.3%	$46
Biomet	-0.4	10.9%	$152
DePuy	-1.0	24.9%	$335

Worldwide Knee Market - 2Q 2011			
	% Gain	Market Share	Sales ($ in millions)
Smith & Nephew	1.1	13.0%	$222
Zimmer	0	27.8%	$471
Wright Medical	0	2.0%	$33
Other	0	2.5%	$42
Stryker	-0.1	19.4%	$329
Biomet	-0.3	13.5%	$228
DePuy	-0.6	21.8%	$370

Source: Joanne Wuensch BMO Capital Markets

Hip and Knee Market Shares

The recent rumors center on Stryker and J&J. Both companies would need to clear significant regulatory and Hart-Scott-Rodino hurdles to get approval of such a deal in the U.S.

As we reported early in August, S&N has 13% of the hip and knee markets. Stryker has 22.4% of the hip and 19.4% of the knee markets. Assuming there would be perfect integration and sales remain the same, a combination would give Stryker 35.4% of hips and 32.4% of knees. The combination would surpass Zimmer's 24.7% in hips and 27.8% in knees. DePuy would have even bigger problems ending up with 37% of hips and 34.8% in knees. On both cases, the merged company would be the dominant player in a remaining four horse race. (Stryker, Zimmer Holdings, Inc., J&J and Biomet).

S&N's advanced wound management and endoscopy businesses would be the most attractive business units after hips and knees, both growing by a reported 4.8% and 10.2%, respectively last quarter.

Regulatory Hurdles

Our legal sources tell us that since the merger would fall below a 60% market share threshold, there would not be any monopolistic issues. However, a likely review by the FTC (Federal Trade Commission), which traditionally reviews medical device mergers, instead of the Justice Department would be a tougher road. The FTC would look at the barriers to entry for competitors caused by the merger, as well as opportunities for anyone stepping into any vacuum that would occur from the merger. Our sources also tell us that European regulators have recently been more stringent than U.S. regulators on large mergers.

On the same day as the S&N rumors, the U.S. Justice Department filed suit to block AT&T's $39 billion deal to buy T-Mobile USA on grounds that it would raise prices for consumers. The government contends that the acquisition of the No. 4 wireless carrier in the country by No. 2 AT&T would reduce competition and thus lead to price increases. In the Stryker situation, it would be number three acquiring number four in hips and knees.

—WE (August 31, 2011)

Spine Wave Expandable Spacer Cleared

Spine Wave, Inc.'s proprietary expandable spacer technology was given a boost when the FDA cleared the company's StaXx XDL Expandable Device in August.

An August 29 Spine Wave announcement noted the XDL was the latest addition to the company's portfolio of PEEK spacers. The device is the company's first product intended to be implanted using a lateral surgical approach.

Mark LoGuidice, Spine Wave's chairman and CEO, said the company will continue to invest "heavily" on the development of differentiated technologies.

"I have been using the StaXx technology from a posterior approach since 2008 and I fully appreciate the unique in situ expansion and distraction capabilities," commented Professor Dr. med. Jürgen Harms, SRH Klinikum Karlsbad-Langensteinbach, Karlsbad Germany. Harms was involved in the development and early clinical work of the XDL System. "The device is meeting or exceeding all of my expectations and while the clinical results are still very preliminary, my early experience has been very favorable."

Spine Wave Products and History

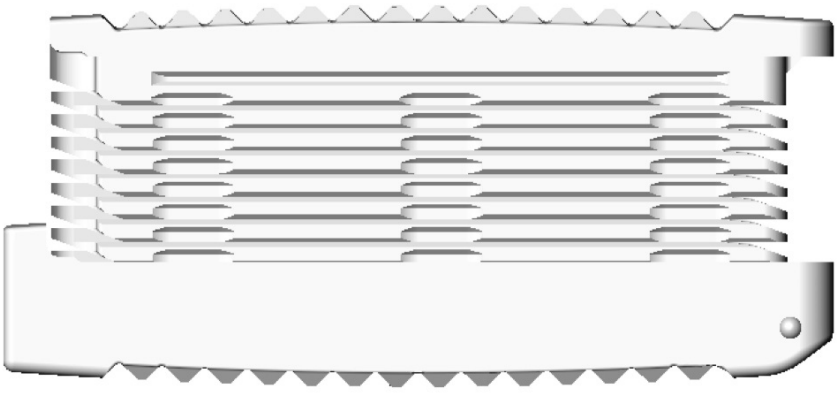
The company's product portfolio includes the StaXx XD and XDL Expandable Devices, CapSure PS2 Spine System, Sniper Spine System, StaXx FX Percutaneous Vertebral Augmentation, NuCore Injectable Nucleus, and several additional products in development.

Spine Wave was founded in February 2001 by Mark LoGuidice and John Pafford, former executives for Sofamor Danek, to commercialize the company's injectable spinal nucleus technology. LoGuidice was the former president of U.S. Operations and Business Development for Sofamor Danek prior to its acquisition by Medtronic, Inc. Pafford, was the long-time head of Research & Development and Regulatory affairs for Sofamor Danek.

After Series A $15 million financing in 2002, Spine Wave merged with VERTx, Inc., giving the company access to the vertebral compression fracture and spinal fusion markets. In April 2007, the company raised an additional $45 million in a Series D financing.

That round of financing was led by the Compass Global Fund along with a syndicate led by and including Ron Pickard. Other current investors that participated in the Series D financing included the company's largest shareholder, New Enterprise Associates, as well as Sprout Capital, Canaan Partners, Thoma Cressey Equity Partners, CHL Medical Partners, Morgenthaler Venture Partners, Foundation Medical Partners, and California Technology Partners.

—WE (August 30, 2011)



StaXx XDL/Spine Wave

legal

Obamacare Leads 2-1 On Appeals

The score is now 2 to 1 in favor of the Affordable Care Act (Obamacare) at the appeals court level as a third appeals court ruled against challengers to the Act. Two more appeals courts are scheduled to hear arguments soon before the U.S. Supreme Court is likely to settle the unsettled law.

Virginia - Challenge Dismissed

On September 8, the 4th Circuit Court of Appeals in Virginia made the score 2 to 1 in favor of the Act. The 4th Circuit vacated a lower court ruling and ordered the court to dismiss cases brought by the Commonwealth of Virginia and Liberty University. The lower court had ruled against the Act.

District Judge Henry Hudson, Eastern District of Virginia declared the individual mandate unconstitutional on December 13, 2010. The government appealed the ruling to the 4th Circuit.

The Appeals Court did not rule on the mandate, but in a unanimous ruling on September 8, the court ruled against the plaintiffs, vacated the district court judgment and remanded the case to that court "to dismiss the case for lack of subject-matter jurisdiction."

Florida - Mandate Unconstitutional

The 11th Circuit Court of Appeals found the individual mandate unconstitutional by a 2 to 1 vote on August 12. The court; however, found the individual mandate to be severable from the rest of the law, and found the remaining provisions "legally operative." That case was brought by the Attorney General of Florida and 25 other states. The lower court had ruled the entire Act unconstitutional.

Thomas More Law Center - Mandate Constitutional

In a 2 to 1 ruling on June 29, the 6th Circuit Court of Appeals ruled that Congress has a "rational basis" to impose an individual mandate and upheld the health law. The plaintiff filed an appeal July 27 with the Supreme Court asking it to overturn the 6th Circuit decision. The Justice Department has until September 28 to respond.

District of Columbia and Missouri (Pending)

U.S. Supreme Court/kconnors morguefile

Two more appeals courts, the District of Columbia (September 23) and the 8th Circuit in Missouri (week of October 17) are scheduled to hear appeals of lower court rulings that found in favor of the mandate or dismissed challenges to the law.

—WE (September 9, 2011)

New Training For FDA Reviewers

The FDA's chief device regulator, Jeff Shuren, M.D., has admitted on more than one occasion that he has a weak bench for reviewing premarket applications for medical devices.

On September 6, he announced two new training programs for review staff at the Center for Devices and Radiological Health (CDRH).

Wikimedia.org

Shuren, the CDRH director, said, "We are investing resources so that new device reviewers at CDRH are equipped to handle the range of issues that arise during the premarket device reviews. This investment will improve the quality of submission review and make the process more consistent and predictable."

Reviewer Certification Program

The first, the Reviewer Certification Program, will launch this month. The program includes up to 18 months of training and requires reviewers to complete online training modules, instructor-led courses, and obtain "critical experience" in the medical device review process. Courses include medical devices, food and drug law and regulatory requirements, the CDRH review process, device design, and the impact of human factors.

Experiential Learning Program

The second, Experiential Learning Program for premarket reviewers, is scheduled to begin as a pilot program in 2012.

This program will include visits to academic institutions, manufacturers, research organizations, and health care facilities and is intended to give reviewers a better understanding of how medical devices are designed, manufactured and used. The agency hopes the program will help new medical device reviewers understand the challenges of technology development and the impact of medical devices on patient care.

"Providing our review staff with opportunities to experience medical device development and use from outside the agency will provide new reviewers with a broader view of the regulatory process for medical devices," Shuren said.

Enhancing staff training is one of the 25 action items listed in the FDA's Plan of Action for Implementation of 510(k) and Science Recommendations announced earlier this year to increase the predictability and transparency of regulatory pathways and to strengthen the 510(k) process.

—WE (September 7, 2011)

Bacterin Initiates Voluntary Quarantine Action

Bacterin International Holdings, Inc. issued a letter on August 23 informing customers of a "voluntary quarantine action" related to a tissue recovery issue with New Life Generation (NGL), a Bacterin recovery partner.

Bacterin accepts donated musculoskeletal tissue which includes bones, cartilage, tendons, ligaments, and skin. Unlike organ donation, which requires specific cross-matching between donors and recipients, tissue donation does not involve blood cells thus a cross-match is not required.

The company said that during a routine FDA audit of NGL, it was discovered that two screeners were not asking the next of kin all of the required questions related to the medical/social inquiry for 50 donors. NGL initiated a voluntary recall after the discovery.

"It is important to note that although there was a deficiency associated with the administration of the medical/social questionnaire, all 50 donors passed the required blood and microbiological testing, their donor consent records were in order, and their medical records were reviewed and approved by Bacterin's medical director—a licensed physician—before they were released," noted the Bacterin statement.

Since the FDA inspection, the company says NLG has re-contacted the next of kin using new donor screeners for 47 of the 50 donors, and all 47 were subsequently redeemed eligible for donation. The remaining three donor families are

Image creation by RRY Publications, LLC. Source: Wikimedia Commons and Bacterin

expected to be contacted shortly, with the delay due to donor families relocating or a change in their contact information.

Bacterin states that it is quarantining the tissue from all 50 donors until the disposition of these tissues is resolved satisfactorily with the FDA. "We have also reviewed our donor acceptance criteria for our recovery agencies and have enhanced the reporting criteria for all of our donor procurement partners to include this contingency moving forward," concluded the Bacterin statement.

Guy Cook, Bacterin's CEO said, "The tissues derived from these 50 donors are less than 1% of our current inventory, and we have ample product to meet our current and future demands. We do not believe this action will materially affect Bacterin's operations."

Bacterin develops, manufactures and markets proprietary biologic products utilizing growth factors in human allograft to create stem cell scaffolding and promote bone and other tissue growth. These products are used in a variety of applications including enhancing fusion in spine surgery, relief of back pain with a facet joint stabilization, promotion of bone growth in foot and ankle surgery, promotion of cranial healing following neurosurgery and subchondral repair in knee and other joint surgeries.

—WE (September 6, 2011)

biologics

Adult Stem Cells – Roses of Texas

Texas docs are at it again! When 37-year-old Dallas firefighter Chris Youngman found he could barely bend down to put on his shoes because of back pain he went to Forest Park Medical Center neurosurgeon Rob Dickerman. Dickerman fused Youngman's spine but in doing so he used an established process but with a new twist. Instead of inserting cadaver bone or cutting off a portion of the patient's hip bone to use, a painful process, he used Youngman's own stem cells to grow new bone.

The less invasive procedure took place in the operating room where Dickerman extracted stem cells from his patient's hip with a long needle. After running the cells though a centrifuge, a process that took only a few minutes, Dickerman mixed them into a putty-like material and stuffed it into spacers which he then inserted between the degenerating discs

According to Dickerman, it is that cell mixture that turns into bone. "Now we don't need to take a chunk of your hip," Dickerman said. "With technology, we can pull the bone marrow directly from the hip, concentrate it to get more stem cells, put it inside of a cage to hold it, then it does its job."

"It's like a cinder block that you build houses on, and you pack concrete inside the cinder block," Dickerman explained. "We're packing stem cells inside this cage and then it grows from bone to bone through the cage. I'm using your bone to grow your bone, so there's nothing really any safer," he said.

Dickerman says that he is seeing high rates of success in that patients are healing in half the time of the traditional spinal fusion.

Four months after his surgery, Youngman reports that his spine is solidly fused. He is working out again, pain-free, is able to tie his own shoes, and says that he is ready to return to full duty again as a firefighter.

—BY (September 1, 2011)

Yellow Rose of Texas courtesy of Wikimedia Commons and Audrey

large joints

"Bouncer" Protein Identified

Maybe now we can work toward preventing "cells gone wild." Researchers at Northwestern University Feinberg School of Medicine have discovered why the immune cells of people with rheumatoid arthritis (RA) become hyperactive and attack the joints and bones. The team says that the immune cells have lost their "bouncer," the burly protein that keeps them in line the same way a bouncer in a nightclub controls rowdy patrons.

The protein, named P21, prevents immune cells from launching into their destructive rampage through the cartilage and bone. When the scientists developed and injected an imitation of the protein into an animal model of rheumatoid arthritis, the disease process was halted.

"The bouncer molecule stopped the immune cells from going crazy," said lead author Harris Perlman, associate professor of rheumatology at Northwestern's Feinberg School, in the September 7, 2011 news release. "Imagine destructive customers in a bar, and the bouncer says, 'You are going to behave!' That's P21. This discovery opens up a new avenue for future therapies, which are greatly needed for rheumatoid arthritis."

These researchers had previously demonstrated that RA patients were low in P21, but the protein's role was unknown.

Wikimedia Commons and Keith Ready, Larsen, N.A., Al-Bassam, J., Wei, R.R., Harrison, S.C.

The new study, which will be published in the journal *Arthritis & Rheumatism*, reveals the protein's vital role in keeping the immune cells in check. Unfortunately, Perlman indicates that there is no effective, nontoxic way to stop the hyperactive immune cells.

To develop the new approach, Perlman and his team tested five different parts, called peptides, of P21. He slipped each peptide into a "ghostlike" molecule that he injected into mice with a rheumatoid arthritis-like disease. The molecule secretly infiltrated the immune cells. After the seven-day trial, one of the tested peptides had calmed the overactive immune cells without toxic effects. Next, Perlman plans a 30-day study with the same peptide to monitor efficacy and toxicity over a longer period of time.

—EH (September 8, 2011)

large joints

First iPod Touch Surgery in Asia

Orthopedic surgeon Arun Mullaji of Breach Candy Hospital and Lilavathi Hospital, Mumbai, performed the first iPod Touch assisted knee replacement surgery in Asia. The patient, a 75-year-old man, was able to walk the same day that the surgery was conducted.

Smith & Nephew developed the system, called Dash Technology, to assist surgeons to perform transplants with more accuracy and in less time. The Dash Smart Instrument System establishes a wireless connection between an iPod touch and a camera that emits infrared beams. The iPod Touch is, in turn, connected to small instruments that are positioned by the surgeon by reading the data in the iPod's high resolution screen for precisely cutting the bone and placing a new joint. All the instructions are loaded on the iPod itself for the surgeons to follow.

"Proper alignment, balance and exact placement of the components are important in replacement surgeries", said Mullaji. He anticipates a 600% increase in the number of revision surgeries in Asia due to poor alignment and instability. The Dash Technology, Dr. Mullaji expects, will increase the success rate of the primary surgery.

The DASH technology has received the CE mark from the European medical authorizing body. Smith & Nephew anticipates that the technology will soon be available in 35 hospitals around the world.

—BY (September 1, 2011)

Source: Wikimedia Commons, Morgue File, Jason Howell, Jade and RRY Photo Creation

extremities

Study: Chondroitin Sulfate Improves Hands

Handling osteoarthritis…A new study, published in Arthritis & Rheumatism, is revealing that chondroitin sulfate significantly decreased pain and improved hand function in patients with osteoarthritis (OA) of the hand compared with those in the placebo group. In addition, the study found that chondroitin sulfate improves grip strength and relieves morning stiffness.

Wikimedia Commons and Wowovr2

"Although hand OA is highly prevalent among adults and can significantly impact the quality of life for suffers, therapeutic options are still limited," said Cem Gabay, M.D., with University Hospitals of Geneva in Switzerland and lead investigation of the Finger osteoArthritis Chondroitin Treatment Study (FACTS), in the September 6, 2011 news release. "There are few trials examining therapeutic approaches specific to hand OA and much of the available evidence has been extrapolated from studies investigating other forms of OA."

The single-center, placebo-controlled FACTS trial included 162 patients with radiographic hand OA who met inclusion criteria—spontaneous hand pain on the visual analogue scale (VAS) of 40 mm (scale 0-100) or more and Functional Index for Hand OA (FIHOA) level of 6 (scale 0-30). Participants received either 800 mg of chondroitin sulfate (80 patients) or placebo (82 patients) once daily for 6 months.

Results showed that patients in the chondroitin sulfate group had significant decrease in global hand pain compared with the placebo group, reflecting an 8.7 decrease on the VAS. Hand function also improved significantly for those taking chondroitin sulfate, decreasing more than 2 points on the FIHOA. Researchers also reported significantly improved hand function and reduction in morning stiffness for participants taking chondroitin sulfate versus placebo.

"Our findings show chondroitin sulfate is a safe and effective treatment for patients with hand OA," concluded Dr. Gabay. "Alternative therapies, such as nonsteroidal anti-inflammatory drugs (NSAIDs), provide similar pain reducing effects, but with considerably more long-term toxicities." Chondroitin sulfate is a naturally occurring molecule and a main component of joint cartilage. The chondroitin sulfate agent used in this study (Chondrosulf) is licensed as a drug in Europe and not as a nutri-pharmaceutical; in the U.S. chondroitin sulfate is sold as a supplement and often paired with glucosamine.

—EH (September 9, 2011)

trauma

Smallest Interference Screw Introduced by Conmed

Conmed Linvatec has introduced one of the smallest biocomposite interference screws available on the market for primary fixation of ACL (anterior) and PCL (posterior cruciate ligament) grafts.

In an August 26 press release, the company says its Genesys Matryx Biocomposite Interference Screw "represents the latest advancement in biocomposite material technology through a proprietary microfiltration process."

According to the company statement, the screw facilitates bone formation due to the presence of the bone pre-cursor Beta TriCalcium Phosphate, resulting in bone reconstruction and integration of the replacement ligament. Interference screw fixation is frequently used in the reconstruction of a failed anterior or posterior cruciate ligament of the knee. The placement of the screw and ligament into the bone tunnel allows the tissue to be held in place and encourages natural healing of the ligament.

While the Conmed screws are indicated for soft tissue fixation, the smaller diameter screws, according to the company, are also indicated for reattachment of soft tissue to bone providing versatility for repair in other areas of the body.

Joseph Darling, president of Conmed Linvatec, said, "The important advancements we have made in biomaterials technology have enabled us to be first to market with one of the smallest available biocomposite interference screws for primary fixation in ACL and PCL reconstructions. We continue to leverage our extensive expertise in biomaterials to deliver a broad range of customer solutions that may help improve patient outcomes."

Conmed is headquartered in Utica, New York, and has 3,400 employees. The company's emphasis is on surgical devices and equipment for minimally invasive procedures and patient monitoring. Its arthroscopy products, powered surgical instruments, electrosurgery, cardiac monitoring disposables, endosurgery and endoscopic technologies are used by surgeons in orthopedics, general surgery, gynecology, neurosurgery and gastroenterology.

—WE (August 31, 2011)

Genesys Matrix Biocomposite Interference Screw/Conmed Linvatec

people

David Floyd Takes Over OrthoWorx

David Floyd has a new job—keeping Warsaw, Indiana, as the "Orthopedic Capital of the World."

Floyd was named the first CEO of OrthoWorx in Warsaw, Indiana, on August 30. The organization, formed in 2009 by orthopedic device manufacturers in Warsaw to "advance and support growth and innovation within the region's uniquely concentrated, globally significant orthopedics device sector," turns to one of its founding members to lead the effort.

The collaborative effort between fierce market competitors was fostered and funded in part by the Indianapolis-based Lilly Endowment.

Warsaw's Challenge

"The Warsaw area must continue to advance and adapt to new global pressures if it is to retain its status as a world-class center of research, development and manufacturing. In its first two years, OrthoWorx has made excellent progress on a number of initiatives and has built important collaborative relationships with community stakeholders," said Floyd in an August 30 press announcement.

Floyd's Local Roots

Floyd is no stranger to orthopedics or Warsaw, having started his career at a local company—Zimmer Holdings, Inc. in 1987. He then held several executive leadership positions, including president of Centerpulse Orthopedics and

David Floyd, OrthoWorx CEO/David Floyd

president and CEO of AxioMed Spine Corporation. After heading Abbott Spine's worldwide spine business, he returned to Warsaw in 2007 to become U.S. president of DePuy Orthopaedics.

He is a graduate of the local college, Grace College in Winona Lake and is an alumnus of the Miller Graduate School of Business at Ball State University and the Kosciusko Leadership Academy. He also has family in the community.

Orthopedic Experience

Floyd became available for the OrthoWorx position after he resigned from DePuy earlier in the year.

Zimmer Senior Vice President and Chief Science Officer Cheryl Blanchard, Ph.D., chair of OrthoWorx's board, said Floyd's industry experience as head of a global billion dollar enterprise, personal ties to the community and work in helping launch OrthoWorx, make him ideally suited for the job.

Floyd said the orthopedic industry has been a great Indiana success story and believes it can continue to be a powerful driver of the region's overall economy.

With competition from Memphis, Tennessee, and new orthopedic device manufacturing plants in Asia, Floyd, OrthoWorx and the collective orthopedics community in the Warsaw region will need every bit of coordination and cooperation to remain at the top of the heap.

Now the collaborative effort has an experienced industry leader and skillful spokesperson to take on the challengers.

—WE (August 30, 2011)

Stryker Replaces International Group President

Stryker Corporation has nabbed Merck & Co.'s top executive from Asia Pacific to become the company's new Group President, International.

Ramesh Subrahmanian/Stryker Corp.

Ramesh Subrahmanian, the former senior vice president and president, Asia Pacific for Merck & Co, was named to the position on August 18. He replaces Andrew Fox, who is leaving, according to a company statement, "to pursue other career opportunities." His appointment is effective September 1, 2011.

Stryker's total sales outside the U.S. in 2010 were $2.527 billion. That was a 5% increase over 2009, but well below 11% sales growth in the U.S. Stryker will certainly be looking to ramp up international sales as competitors target those emerging markets.

Stephen MacMillan, Stryker's CPCEO (chairman, president and CEO), said Subrahmanian brings a "strong global perspective to Stryker through his successful leadership roles in the U.S., Germany, India and Asia Pacific. He is a proven healthcare leader who has demonstrated the ability to drive profitable growth and innovation, and we look forward to taking advantage of his varied experiences as we continue to grow our international businesses."

Subrahmanian spent 23 years in the pharmaceutical industry where held various senior level jobs. In addition to Merck, he worked for Sanofi-Aventis and Hoechst Marion Rousel Ltd. At Stryker, he will have responsibilities for all the company's international business and work out of Singapore.

—WE (August 29, 2011)

THE PICTURE OF SUCCESS

Dr. Douglas Jackson

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

Dr. Douglas Jackson

Dr. Doug Jackson, former president of the American Academy of Orthopaedic Surgeons (AAOS), is both a recipient of the now well-known and established AAOS Diversity Award, but is probably the person partially responsible for the award in the first place.

The AAOS Diversity Award is presented annually to living Academy Fellows or Emeritus members who have distinguished themselves through their outstanding commitment to making orthopedics more representative of and accessible to diverse populations. Over the past eight years, recipients have been recognized for:

- Actively working to reduce obstacles that prevent greater numbers of women and under-represented ethnic groups from entering the field of orthopedics in the U.S.
- Teaching culturally competent care in a clinical and/or institutional setting.
- Sponsoring, mentoring and/or guiding young orthopedists, culturally diverse and female medical students.
- Acting as a role model to colleagues and leading by example in promoting diversity.
- Staffing clinics that provide musculoskeletal care for underserved U.S. populations.
- Recruiting and encouraging diverse ethnic and/or female medical and pre-med students to pursue a career in orthopedics.
- Acting in a leadership role in eliminating disparities in health care and/or promoting culturally competent care.
- Supporting diversity-related legislation, activities, and issues in health care.
- Making a long-lasting impact on the profession's diversity and/or on orthopedic patient care.
- Writing and publishing materials that relate to culturally competent care and/or health care disparities.

Dr. Jackson was this award's 2010 recipient—and probably the only recipient whose childhood included time in a mental institution.

Life began for Dr. Jackson in South Dakota. The Jackson family moved when he was very young to Spokane, Washington, which is where he grew up. Much of Dr. Jackson's childhood was spent on the grounds of the mental institution where his father was a staff member. "My father was the administrator," recalls Dr. Jackson, "and I had ample opportunity to discuss medicine and mental health with the staff, as well as the chance to interact with and observe the patients. I could see that these people were suffering, and for a while, I was set on helping people by pursuing a career in psychiatry."

"While I ended up encountering strong resistance to us becoming a for profit entity, I helped convinced people that we needed to make this change because no one was really speaking out for our profession, our members, or our patients…we needed a more effective political action committee (PAC)."

"When I started this effort there were many programs that had never had a female orthopedist. I actually received several angry letters from orthopedists saying that they had daughters and that there was no way they would let them become orthopedic surgeons because they were not strong enough and because of the long hours."

"At first I was interested in schizophrenia and began an M.D./Ph.D. program in Experimental Pathology and Psychiatry. One summer while I was working with tissue cultures, isolating enzymes and trying to get the cells to produce different enzymes and proteins, I found that they got infected with a new bacteria. I became frustrated and thought, 'It will be 50 years before we know how to do this.' During that time I did a rotation on orthopedics and had an outstanding experience with Dr. Kay Clausen, the chair at the University of Washington in Seattle. I was hooked…my mind had been changed for me."

Doug Jackson would go on to train with the esteemed Dr. John Feagin at the United States Military Academy, treat Olympic athletes, and bring lasting change to the field of orthopedics.

The Vietnam years were particularly formative for Dr. Jackson. "During Vietnam I spent two productive years at West Point where I worked alongside Drs. John Feagin, Jim Nicholas, Anthony DePalma and Charlie Neer. It was an exciting time to be learning about the knee and shoulder, with sports medicine in its infancy and the arthroscope having just made its way to the U.S. I was fascinated by the knee in particular because it is the largest joint in the body, is the most common reason that people see orthopedists, and provides the opportunity to treat patients of all ages. Also, because John Feagin was a veteran with regard to Academy participation, he spent time teaching me the ins and outs of the organization."

From the ins and outs to the top post, Dr. Jackson had clear goals and plans for the organization that he cherishes. "I had served AAOS in a number of capacities through the years, and could see that there were several concrete changes that would really help strengthen the community of orthopedists. First of all, we needed to have both a C-3 and C-6 tax status so that we could spend more resources on lobbying activities. While I ended up encountering strong resistance to us becoming a for profit entity, I helped convinced people that we needed to make this change because no one was really speaking out for our profession, our members, or our patients… we needed a more effective political action committee (PAC). Changing our status did so, and in the end further contributed to us being a more influential group that allows us to build coalitions with other medical organizations and patient groups to pursue common interests."

Dr. Jackson's second goal as head of AAOS evolved from his sitting across from patients and thinking, "I need a translator in here." "It hit me that we had 86 dialects in the Long Beach, California, school system…and I found it disconcerting that I would sit across from, say, my Cambodian patients and not understand what they were telling me. It was obvious that they would be better served by someone from their own community."

His attempts to open up the field to those outside of the traditional boys club were at times met with scorn. Dr. Jackson: "I also wanted to attempt to bring more women into the field. My goal was to eliminate unintended barriers and then, if women didn't choose orthopedics, then that was fine. When I started this effort there were many programs that had never had a female orthopedist. I actually received several angry letters from orthopedists saying that they had daughters and that there was no way they would let them become orthopedic surgeons because they were not strong enough and because of the long hours."

"In the end, I was able to appoint a diversity study group and subsequently a committee that reported directly to the Board of Directors. The diversity initiatives were eventually institutionalized within the Council structure."

Dr. Jackson's other substantial goal involved one of the most critical, yet difficult, issues facing the field. "I saw that we had 600 new people coming into orthopedics each year, and thought that if we could encourage even two or three of them to become clinician/scientists, then the field would be strengthened. This is no small task, as the person really needs a Ph.D. (or the

equivalent in research methodology) in a specific area…and acquiring the necessary research skills usually takes three years. It's more difficult for some specialties—and, many universities require that doctors generate their own income. It's a unique person who can be a successful clinician/scientist…and remember, you're competing against people doing it full time."

Having been in the lab trenches, Dr. Jackson knows of what he speaks. And he walks the walk with his wallet. "Fresh out of residency I went searching for an academic position that would be focused solely on sports medicine and knee surgery…a luxury at the time. I decided to enter private practice and put 25% of my income back into research. That way, the funds would always be available and I would be in control."

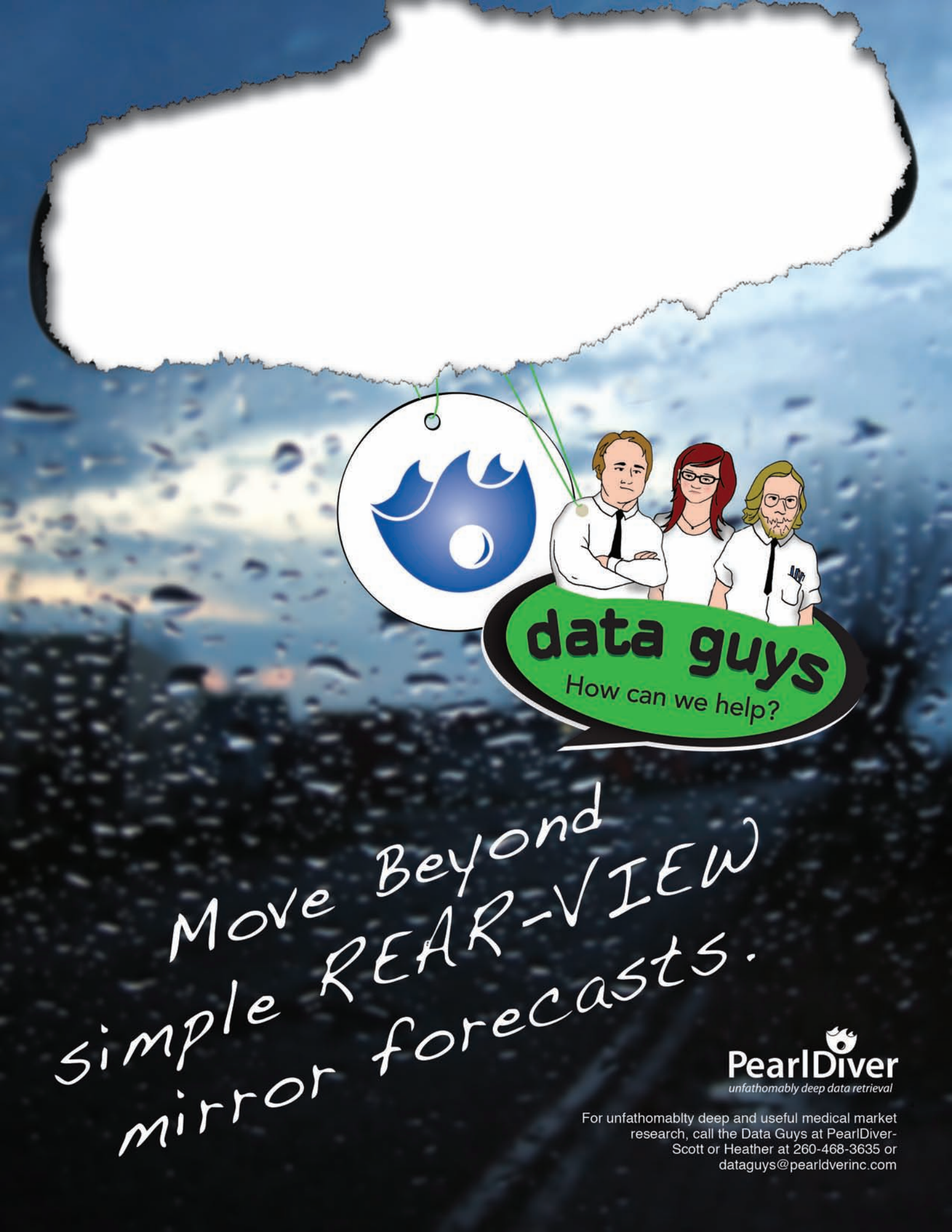
"It took ten years to build a private lab, but I had a full staff engaged in a variety of different kinds of projects. One of the most interesting was our goat model. At the time, companies didn't have to prove that their products worked, they just had to demonstrate that they were safe—then you could commence human studies. Large companies started contracting out lab work; we were well positioned because we could make decisions quicker. A company could bring us its product and we would put it into our model and tell them what the cells would be doing in six weeks and three months. We had the ability to compare each scenario to hundreds of other similar situations that we 'ran.' Even today, more than 20 years later, my associates are continuing this work."

When asked about the most critical issues facing orthopedic surgeons today, Dr. Jackson says that "simply" staying relevant is a challenge. "Orthopedists are facing a lot of turmoil regarding changing practice models, and are increasingly becoming salaried and giving up control. I think that young surgeons are having to make decisions that we veteran orthopedists never had to face. For example, they must choose what model to follow—and, critically, they are supposed to know how that will impact their practices years from now…something that is almost impossible to know."

"Once you get into practice you have a ten year half-life where your education keeps you current. Then, if you don't keep learning you start to lose your footing. By your third decade in practice you can drift and become out of touch. This is only amplified if you have problems with family, alcohol, or prescription drugs. And remember, the public expects a doctor to be committed for a lifetime."

Dr. Jackson, who says that if you don't want complications you shouldn't operate, has found ways to deal with the stress of the profession. "I've participated in endurance events and athletic activities, and regularly take time away with my wife and family."

Dr. Douglas Jackson…diversity and excellence for a lifetime. ◆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