VOLUME 11, ISSUE 9 | MARCH 17, 2015

Orthopedics This Week

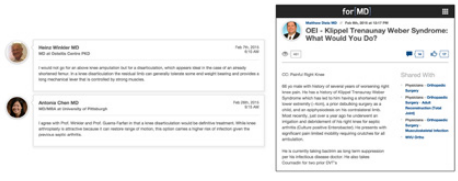
WEEK IN REVIEW

4 **3 Doctors in Syria's Hell >>** Three doctors who were thrust in the middle of Syria's chaotic hell tell their story this week. So many of our colleagues also served and these stories remind the rest of us of the astonishing courage, perseverance and dedication to patients that these combat doctors display in the middle of such searing, tragic circumstances. We are privileged to be able to convey these remarkable stories.

7 **New Obamacare Surveys of Docs, Patients and Healthcare Execs Surprises >>** The disruption of old healthcare models ushered in by the Affordable Care Act has thrown patients, physicians and healthcare providers into a brave new world. How are those actors feeling about their place in this new world? Three recent polls produced some surprising findings. See them here.

12 **Jones v. Mullaji: The Tourniquetless Total Knee >>** "Let it bleed," argues Dickey Jones. "Tranexamic acid has been a game changer, and use of a CarboJet increases cement penetration. You don't need a tourniquet." Arun Mullaji says, "You should use a tourniquet because it helps reduce blood loss, provides much better clarity, and it gives you a better cement mantle."

16 **Web Platform Connects Surgeons With Fellow Trainees // New Study: Low Volume Surgeons Doing Most Reverse Shoulders // Rocky Tuan, M.D., Receives Distinguished Research Award From "Pitt" >>** A new web platform provides a peer-level second opinion network for surgeons. Surprise! Those least experienced with reverse shoulder arthroplasties are doing the majority of these complex surgeries. And Rocky Tuan, M.D., of the University of Pittsburgh, has received the 2015 Chancellor's Distinguished Research Award.



BREAKING NEWS

19 **Apple Watch** Skips a Few Beats

Zimmer Secures Cheaper Financing for **Biomet Deal**

OrthoNOW Opens First Ortho Urgent Care **Franchise Location**

India Doc **Corrects 90º Deformity**

Affordable Care Act Price Drops 29%

Treadmill OK Sub for Outdoor **Running**

For all news that is ortho, read on.

Orthopedic Power Rankings

Robin Young's Entirely Subjective Ordering of Public Orthopedic Companies

THIS WEEK: Power Rankings is about finding undervalued orthopedic equities. We hunt for cheap orthopedic dollars. What constitutes "cheap?" While we use the usual measures like PE, PSR and PEG as guides, we also look at managements and products. Sometimes equities are expensive because of "hype" or cheap because of past stumbles. Our aim is to measure underlying values and rank accordingly.

RANK	LAST WEEK	COMPANY	TTM OP MARGIN	30-DAY PRICE CHANGE	COMMENT
1	1	Integra LifeSciences	12.57%	4.73%	For the current quarter most analysts expect IART to report an 11% rise in earnings on about 7% sales increase.
2	3	Alphatec	0.33	11.36	Has Alphatec turned a corner? Buyers seem to think so. ATEC is still lowest future PE and 2nd lowest PSR.
3	5	Exactech	10.44	6.65	Most analysts expect little to no growth in earnings and sales this quarter. As a result, EXAC's equity is the 3rd least expensive in orthopedics.
4	2	ConMed	10.51	9.23	The rehab project that is ConMed gets its next public report card when it issues the first quarter results. Analysts are expecting down sales and earnings.
5	9	MicroPort Scientific	16.53	3.16	In China MicroPort announced the successful launch of its Futago spine fusion implants. In U.S. AAOS looms large.
6	4	Stryker	11.52	(1.80)	One director sells a large, 400,000 block of stock. Bad timing. SYK is the 2nd overall least expensive ortho equity. Sell high, not low.
7	7	Zimmer	29.12	(0.56)	Zimmer's Trabecular Metal Reverse Shoulder system with Vivacit-E Vitamin crosslinked poly announced. Very innovative. And just before AAOS!
8	6	Medtronic	28.84	2.80	Would MDT ever consider spinning off its spine unit? Given the valuations at NUVA, GMED, K2M and LDR, it's a thought.
9	10	Johnson & Johnson	28.44	(1.17)	There are two keys to JNJ as an equity. Its 28% of sales operating profit and its dividend, which at $2.80 per share, is one of the highest.
10	8	Orthofix	7.46	2.53	According to Yahoo Finance, only two analysts are covering OFIX. And using their Ouija boards they forecast rising sales and earnings this year.

Robin Young's Orthopedic Universe

TOP PERFORMERS LAST 30 DAYS

	COMPANY	SYMBOL	PRICE	MKT CAP	30-DAY CHG
1	Bacterin Intl Holdings	BONE	$3.62	$24	23.97%
2	MiMedx Group	MDXG	$9.84	$1,049	18.55%
3	Alphatec Holdings	ATEC	$1.47	$147	11.36%
4	ConMed	CNMD	$51.38	$1,416	9.23%
5	Exactech	EXAC	$23.59	$328	6.65%
6	Tornier N.V.	TRNX	$26.31	$1,289	5.37%
7	Integra LifeSciences	IART	$58.91	$1,931	4.73%
8	Wright Medical	WMGI	$26.50	$1,361	4.66%
9	RTI Biologics Inc	RTIX	$5.22	$298	3.37%
10	K2M Group Holdings	KTWO	$19.33	$763	4.77%

WORST PERFORMERS LAST 30 DAYS

	COMPANY	SYMBOL	PRICE	MKT CAP	30-DAY CHG
1	Aurora Spine	ASG	$1.09	$20	-11.87%
2	TiGenix	TIG.BR	$0.75	$120	-11.44%
3	CryoLife	CRY	$10.25	$289	-9.85%
4	Smith & Nephew	SNN	$33.50	$15,002	-5.82%
5	Stryker	SYK	$91.29	$34,576	-1.80%
6	LDR Holding Corp.	LDRH	$36.21	$959	-1.20%
7	Johnson & Johnson	JNJ	$99.21	$275,859	-1.17%
8	Zimmer Holdings	ZMH	$116.25	$19,751	-0.56%
9	NuVasive	NUVA	$46.15	$2,222	-0.41%
10	Globus Medical	GMED	$24.89	$2,357	1.51%

LOWEST PRICE / EARNINGS RATIO (TTM)

	COMPANY	SYMBOL	PRICE	MKT CAP	P/E
1	Johnson & Johnson	JNJ	$99.21	$275,859	16.61
2	Globus Medical	GMED	$24.89	$2,357	19.06
3	Medtronic	MDT	$76.47	$108,975	19.12
4	Zimmer Holdings	ZMH	$116.25	$19,751	19.92
5	Exactech	EXAC	$23.59	$328	20.16

HIGHEST PRICE / EARNINGS RATIO (TTM)

	COMPANY	SYMBOL	PRICE	MKT CAP	P/E
1	Orthofix	OFIX	$32.80	$605	209.54
2	MiMedx Group	MDXG	$9.84	$1,049	196.80
3	NuVasive	NUVA	$46.15	$2,222	110.67
4	RTI Biologics Inc	RTIX	$5.22	$298	81.94
5	CryoLife	CRY	$10.25	$289	47.46

LOWEST P/E TO GROWTH RATIO (EARNINGS ESTIMATES)

	COMPANY	SYMBOL	PRICE	MKT CAP	PEG
1	Exactech	EXAC	$23.59	$328	1.34
2	Globus Medical	GMED	$24.89	$2,357	1.45
3	ConMed	CNMD	$51.38	$1,416	1.56
4	CryoLife	CRY	$10.25	$289	1.58
5	Integra LifeSciences	IART	$58.91	$1,931	2.31

HIGHEST P/E TO GROWTH RATIO (EARNINGS ESTIMATES)

	COMPANY	SYMBOL	PRICE	MKT CAP	PEG
1	MiMedx Group	MDXG	$9.84	$1,049	13.12
2	Orthofix	OFIX	$32.80	$605	11.39
3	NuVasive	NUVA	$46.15	$2,222	9.68
4	RTI Biologics Inc	RTIX	$5.22	$298	5.46
5	Smith & Nephew	SNN	$33.50	$15,002	4.40

LOWEST PRICE TO SALES RATIO (TTM)

	COMPANY	SYMBOL	PRICE	MKT CAP	PSR
1	Bacterin Intl Holdings	BONE	$3.62	$24	0.70
2	Alphatec Holdings	ATEC	$1.47	$147	0.71
3	RTI Biologics Inc	RTIX	$5.22	$298	1.13
4	Exactech	EXAC	$23.59	$328	1.32
5	Orthofix	OFIX	$32.80	$605	1.52

HIGHEST PRICE TO SALES RATIO (TTM)

	COMPANY	SYMBOL	PRICE	MKT CAP	PSR
1	TiGenix	TIG.BR	$0.75	$120	21.04
2	MiMedx Group	MDXG	$9.84	$1,049	8.87
3	LDR Holding Corp.	LDRH	$36.21	$959	7.17
4	Medtronic	MDT	$76.47	$108,975	6.22
5	K2M Group Holdings	KTWO	$20.27	$800	5.08

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

3 Doctors in Syria's Hell

BY ELIZABETH HOFHEINZ, M.P.H., M.ED.

Wikimedia Commons and Scott Bobb, photo creation by RRY Publications LLC

Orthopedics, as a scientific discipline was forged in the awful, searing fires of war. Debridement, amputation, wound irrigation, culturing, lab work, frames, fracture repair technique, EVAC hospitals, long bone fracture fixation and hand reconstruction—these came from the Civil War, World War I, World War II, Korea and Vietnam.

But war was the last thing on my mind when, earlier this year, I made a fateful phone call. I was on assignment as a writer for *Orthopedics This Week* calling clinical investigators to learn about their studies. In the course of a conversation with a young, articulate physician he said that he'd recently been a doctor in Syria. I asked the next question. What was your experience?

What he said next changed everything. He opened the door to a tragic and horrifying account of what he and two other healing professionals endured in Syria between 2011 and 2013.

This young physician and his colleagues do not want to be thought of as heroes. In their view they were in a situation where they could not look away.

This is their story. They have asked to be kept anonymous.

Doctor A, Doctor B and Doctor C

"I left at Christmas time in 2012," says Doctor A, who was a resident in one of Damascus's main hospitals. "The lack of equipment and medicines was horrible, and sadly, everyone was just living day by day. At one point—when we should have had a total of 130 residents in the hospitals of Damascus—in reality we had about 10…they left to go to their families and to their home towns because it was too dangerous in the city."

"Whenever a battle broke out patients couldn't get from the suburbs to Damascus for treatment. We ran out of ORs and we had to stabilize people in the hallway. The worst day I recall was when we treated 82 gunshot wounds and went three days without sleep."

Doctor B: "My worst day was when a town near Aleppo was hit in a chemical attack and we received injured and poisoned patients. We used the few gas masks available, but people were choking everywhere; we lost more than 200 people in my hospital that day."

On edge and under resourced, these medical professionals were forced to be creative in ways they had never dreamed of. Doctor A: "In some places hospital staff fabricated prostheses out of metal pipes; people were so desperate that they were lining up for this. We had to suture patients without using anesthesia, often just giving them a placebo and hoping for some pain relief."

Doctor B: "From June to October 2013 Aleppo was surrounded and there were no drugs or X-rays and sometimes no labs available. We would just look at the external appearance to confirm limb deformity. Then we would look for skin discolorations like hematoma and assess whether or not the patient could tolerate pain. We had nonsteroidal anti-inflammatory drugs at times;

other times we would (confidently) tell patients to go home and eat an onion. I recall one gentleman with malignant hypertension…I had no medication to give him, so I had him puff on a hookah and exhale from the nose, thus producing a hypotensive reflex. His systolic blood pressure went from 190 to 150."

Dr. C is an emergency physician who volunteered in a hospital in northern Syria for two weeks. "There were mass casualties on a regular basis; the norm was not to administer pain medication before surgery. Although our hospital was well supplied with medications, there was no CT scanner and many mangled extremities. We could not handle treating pelvic fractures operatively, so we had to send patients away, advising bed rest for six weeks. Primary staff was lacking training on appropriate pre-op and resuscitations; vital signs were a luxury. And although surgeons had great experience with trauma, they were often severely burned out. Many surgeons were still residents, lacking attending level judgment. Most of our pediatric patients were transferred out; there was a real need to address pediatric level injuries."

Dr. B: "Even for amputations it was all about the placebo; people would typically go unconscious because of the pain."

"The ongoing problem was shrapnel. We would wash the limb and look for any open wounds; if it was small we would leave it alone…if it was large then we would have to dig around inside the wound and look for it. There were no X-rays."

You Make Do

"For two years, I diagnosed pulmonary emboli without X-rays."

Dr. B, who was putting in 120 hours/week at the hospital (as were most of the residents in war zone programs), says, "For an entire month we worked with no electricity and no water. We made a hole in the ground and dug a well around the hospital. Each day there were 50-60 dead bodies that we would put in the garden—which is where we grew our food. All the stores had pasta to eat…and we grew parsley and onions…we were down to one meal a day."

Doctor A notes, "In Aleppo, the medical staff would cook a chicken leg three times in order to flavor the rice."

"At times we could send people to Turkey for treatment," says Doctor B. "The biggest complication was osteomyelitis; if we didn't have an orthopedic plate we would try to get them across the border. That is where nearly any kind of drug or medical material is available because there is a lot of profiteering."

Doctor A: "It's sad, but I don't think going home is an option for doctors who have left. One day, maybe…but in the meantime perhaps we can empower young doctors who have chosen to stay."

Come Up From the Fields, Father

Doctors A, B & C—like volunteer or professional healers in war before them—didn't see the big picture, didn't look for it. What they saw were fathers, mothers, sons and daughters who'd been maimed, broken or traumatized. These young physicians went into the fire with almost nothing. It took every ounce of strength, knowledge and will to heal, comfort and repair the thousands of patients who came their way.

How many mothers do not grieve, are not dressed in black, do not lean heavily on the gravestone because of Doctors A, B & C? How many fathers can work alongside their children in the field because of Doctor's A, B & C?

It was quite a story I found. I'm happy to end this story by saying that all three young doctors are safe. And they are all employing their experiences and training to heal, comfort and repair new patients every day. ♦

New Obamacare Surveys of Docs, Patients and Healthcare Execs Surprises

BY WALTER EISNER





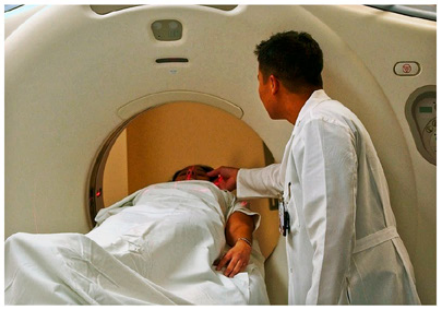



Photo creation by RRY Publications, LLC and Pixabay

While waiting for the Supreme Court to decide the latest constitutional challenge to the Affordable Care Act (ACA), a.k.a. Obamacare, Congress dithers and Obamacare gets cheaper as healthcare cost increases slow.

The ACA has tossed old healthcare business models on their heads and spawned new challenges and opportunities in the form of Accountable Care and Physician Hospital Organizations, distribution disintermediation and the end of fee-for-service.

For patients, physicians and medical device makers, the disruptions are coming fast and furious. More patients have health insurance, but higher deductibles. Physicians are getting more tools, but quickly losing their practice independence. Device makers are returning steady profits for shareholders, but are under increasing pressure to consolidate and reduce costs.

Everybody's boat is rocking.

Survey Says…

So, how are those patients, physicians and healthcare executives feeling? Are they anxious? Optimistic? Angry? Satisfied?

Three recent independent and unrelated surveys have the surprising answers.

We're Not #1

First, according to a Zogby Analytics poll called America Speaks, Volume 15, supported by the American Medical Association and published by Research America on February 23, 2015, only 24% of Americans believe the U.S. has the best healthcare system in the world. A plurality of those in the poll think the Food and Drug Administration (FDA) should move more quickly in order to get new treatments to patients, even if it means there may be risks. They're even willing to pay $1 more in taxes per week if they were certain that all of the money would be spent on additional research.

If more is not spent on shoring up medical science funding, about two-thirds of the respondents doubt that by 2020 the U.S. will maintain its current leadership in science and technology.

A plurality of Americans also believes that the 1.5% of government spending currently allocated for biomedical and health research is not enough. Surprisingly to us, by a wide margin, Americans favor expanding federal funding for research using embryonic stem cells.

census.gov

Zogby polled about 1,000 Americans over 18 years of age at the end of 2014. The maximum theoretical sampling error was +/- 3.2%. The data are demographically representative of adult U.S. residents.

Healthcare Execs Are Smiling

Second, also a little surprisingly, given the anecdotal complaints about the medical device tax, a burdensome FDA and belt-tightening payers, a big majority of senior executives from healthcare companies across the industry are optimistic and predict a stronger year ahead. Only 3% predict a weaker year, according to a GE Capital Healthcare Financial Services survey of 521 executives.

Physicians Crave Independence

Finally, a recent survey of dozens of independent physicians indicates that many of them are nervous and unsure of their future.

According to the 2015 Independent Physician Outlook & Sentiment Survey, conducted by ProCare Systems, a Michigan-based consultancy that advises independent physician groups across the country, 44% of surveyed physicians say they anticipate being forced to sell their practices to a larger player at some point in the future. A full 73%, however, would prefer not to sell—"a clear indication that doctors are feeling pressured," stated the survey.

To summarize, Americans want more and are willing to pay for it, physicians are nervous about losing their independence and healthcare executives are optimistic about their future.

Below is a more detailed look at the three surveys.

Patients/Taxpayers

According to the America Speaks poll:

- 70% of Americans agree basic scientific research that advances the

frontiers of knowledge, even if it brings no immediate benefits, is necessary and should be supported by the federal government.
- 80% of Americans say it's important that elected officials at all levels listen to advice from scientists.
- 78% of Americans say it's important that our nation supports research that focuses on improving how our health care system is functioning.

The poll's researchers wrote that their results; "underscore the expectation of Americans that elected officials will enact smart policies to ensure our nation's preeminence in science and technology. Americans strongly believe that research will unlock the mysteries of major health threats."

They add that Americans also believe that research in an economic driver that fuels smart business and creates high-quality jobs.

Leaders of Research America urge Congress to support proposals to "advance precision medicine, combat antibiotic-resistant bacteria, repeal the anti-innovation medical device tax" and increase funding for federal health agencies.

Physicians

Shrinking reimbursements and skyrocketing operating and regulatory costs have left many smaller physician groups strapped for cash, says the GE physician survey.

A full 94% of those surveyed believe market dynamics ought to give rise to new practice models that foster physician independence. That led to 72% saying they envision a significant number of physicians returning to independent practice in the future.

Fred N. Davis, M.D., co-founder and president of ProCare Systems, wrote, "Physicians can thrive in their practices, rather than becoming employed by larger health care institutions, by embracing innovative practice models designed to meet the increasing complexity of today's health care environment while keeping their practices sustainable and profitable."

While the physicians ranked escalating costs and downward reimbursement pressure as the most challenging aspects of running their businesses, followed by the difficulty of maintaining referral streams, 88% see a future in which reimbursement is driven by their ability to provide value, defined as the intersection between quality care and cost management.

Whereas models based on increasing patient volumes have long been strength of larger providers, Davis says "smaller physician groups—with their agility and natural inclination toward

quality, innovation and efficiency—are well positioned to gain ground in a marketplace increasingly driven by consumers and focused on outcomes. This trend could not only help small practices remain independent, but allow others to reclaim their autonomy as well."

New Clinical Models

He adds that independent specialists must adopt new clinical and administrative systems that allow for "seamless integration with emerging organized systems of care."

Nearly all the physicians surveyed recognized the emphasis the Affordable Care Act has placed on preventative care and wellness management along with whole-person care. "For those same physicians to thrive in the new market, they will need to reorganize

Andrew Huth and RRY Publications, LLC

elements of their practice to deliver on this paradigm." Some have described the specialist primary care physician and the Centers for Medicare and Medicaid Services is experimenting with new ways to pay specialists, starting with oncologists.

A huge (91%) majority of respondents said they could envision a future where "whole-person care" will play a significant role in how their practice operates. Finding a way to blend their specialization with the treatment of "whole" patients will be a necessary step toward innovation, says the survey.

Nearly half of respondents said that being a part of an independent practice association—a co-op style alliance of physician practices—was attractive for the increased scale it would provide in

negotiating with payers and larger organized systems of care.

The physician survey continues that any solutions the market provides "will allow smaller practice groups to mimic the support infrastructure and scale of large institutions, while maintaining the qualities that have long been hallmarks of smaller, more nimble organizations."

Healthcare Executives

Each tweak of the law and each change of a regulation can have a major impact on the device industry. But according to the GE survey, despite knowing the challenges ahead of them, healthcare executives are less concerned about healthcare reform and regulatory oversight than they were just a year ago.

According to the results, 43% of those surveyed put the ACA as the greatest challenge the healthcare industry will deal with in 2015. Rounding out the top three challenges are regulatory oversight (30%) and the U.S. economy (17%). In last year's study, ACA also topped the list, cited by 57% of respondents, with regulatory oversight (20%) and the U.S. economy (13%) also getting consideration.

"We agree with the optimism shown by our customers and other healthcare industry leaders about 2015. Though less than last year, implementation of the ACA is still top of mind across the industry," said Al Aria, senior managing director of GE Capital, Healthcare Financial Services' corporate finance team.

The GE survey also considered these additional areas of interest to healthcare executives:

Business Growth

There are three main ways for expanding business in the coming year. The most popular option, listed by the survey respondents, is to revitalize or upgrade an existing part of the business (38%). Other options include a merger or acquisition (37%) or launching a new arm of the business (25%).

Financing

Only 6% of respondents are expecting their capital needs to be lower in 2015 than they were in 2014. Sixty-seven percent expect them to be the same and 27% expect them to be significantly higher.

ACA Changes

One of the few areas where expectations are divided, according to the survey, is changes to the ACA. While they all acknowledge change is happening, 43% expect them to the moderate while 41% expect them to be insignificant.

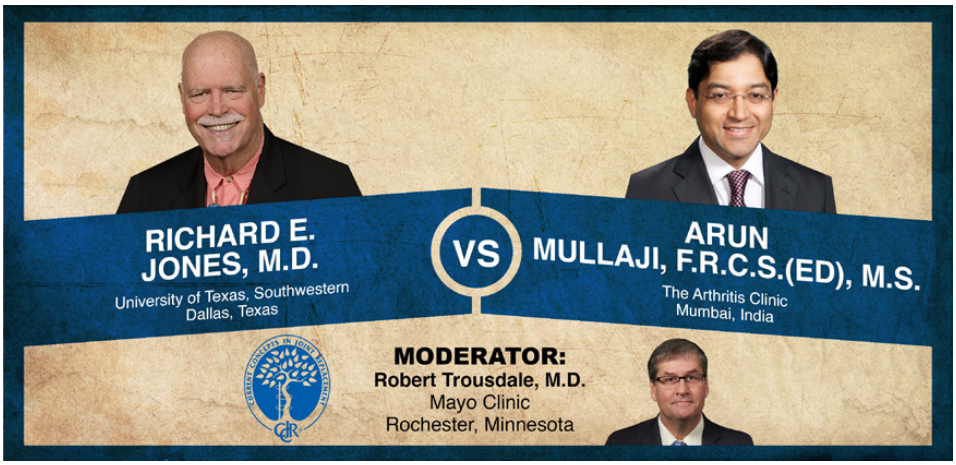
Short of the Supreme Court intervening, Republicans winning the White House in 2016 and capturing a 60-vote, veto-proof majority in the U.S. Senate, the ACA train appears to have left the station. Patients and physicians still see much work to be done to speed up innovation and maintain physician control but device makers have adapted and are thriving. ♦

Below are links to the three surveys described in this story.

- America Speaks PDF
- http://revcycleintelligence.com/2015/01/14/healthcare-leaders-express-confidence-for-2015/
- http://www.physiciansnews.com/

Jones v. Mullaji: The Tourniquetless Total Knee

BY ELIZABETH HOFHEINZ, M.P.H., M.ED.



Current Concepts in Joint Replacement/RRY Photo Creation

"Let it bleed," argues Dickey Jones. "Tranexamic acid has been a game changer, and use of a CarboJet increases cement penetration. You don't need a tourniquet." Arun Mullaji says, "You should use a tourniquet because it helps reduce blood loss, provides much better clarity, and it gives you a better cement mantle."

This week's Orthopaedic Crossfire® debate is "The Tourniquetless TKA: Let it Bleed." For the proposition is Richard E. Jones, M.D. of the University of Texas, Southwestern. Arun Mullaji, F.R.C.S.(Ed), M.S. of The Arthritis Clinic in Mumbai, India is in opposition. Moderating is Robert Trousdale, M.D. of Mayo Clinic.

Dr. Jones: "The benefit of a tourniquet is a bloodless field, and possibly a better bone-cement-endplate interface for fixation. But there are problems. There may be direct or indirect nerve damage, a delay in the recovery of muscle function, and vascular issues are possible. You alter the hemodynamics of the limb with exsanguination and get a 15-20% increase in circulatory volume. There may be reactive hyperaemia with tourniquet release and get 10% increase in limb size, which increases soft tissue tension and causes secondary pain. There is a higher risk of vascular injury in patients with calcified atherosclerotic arteries."

"There is increased risk of deep vein thrombosis (DVT) with direct trauma to the vessel walls, increased levels of thrombin/antithrombin, and a 5.3x more risk for large venous emboli propagation and transesophageal echogenic particles. We have observed an increase in wound healing disturbances, and a higher propensity for wound leakage. One of the game changers may be the local application of tranexamic acid."

"For the last 12 years we haven't used a tourniquet on any primary or revision total knee arthroplasty [TKA]. A survey done by the American Association of Hip and Knee Surgeons (AAHKS) found that 37% of surgeons always use a tourniquet and 58% always except with vascular concerns; 5% were only using it during cementation."

"Our operative protocol is regional anesthesia, incision, and approach made in 90 degrees of knee flexion. You would be very surprised at how little it bleeds. There is meticulous hemostasis because you're looking at them—we use an argon beam coagulator. We use ropivacaine with epinephrine injected periarticular, and we coagulate the posterior tissues—particularly during the flexion-tension balancing when you can access it. We also use copious saline jet lavage."

"We deliver filtered carbon dioxide through a CarboJet, which dries and prepares the bone beds for cementation. We use local tranexamic acid, then routine closure and compressive dressing. Cement penetration is improved and the CarboJet resulted in a 35% increase in cement penetration versus the use of pulsatile lavage only. That is important because increased penetration improves the cement mantle toughness...and increased penetration reduces bone-cement interface stresses. And it counters bone resorption over time."

"So our recommendation follows that of the Rolling Stones…let it bleed."

Dr. Mullaji: "You should use a tourniquet because it helps reduce blood loss, provides much better clarity during surgery, and it actually gives you a better cement mantle. We know that blood at the interface reduces the adhesive and tensile strength by almost 50%. So it should be a simple matter of comparing series done with and without a tourniquet and looking at the outcomes of blood loss, pain, functional recovery, complications, and operative time.

Unfortunately, it's not that easy because there are a number of confounding variables in these studies (tourniquet pressure, time of application, the anesthesia used, etc.)."

"We did a prospective, randomized double blind study. The number of patients (45) was based on a power analysis. These were bilateral patients undergoing cemented navigated total knees who all received a spinal epidural; they were all performed by one surgeon. On one knee we used a tourniquet during cementing and on the other knee we used one from incision until the cement had hardened."

"We excluded patients with a very thick circumference of the thigh, those with peripheral vascular disease and bleeding disorders, and people with significant differences in deformity on the two sides. We measured pulse, blood pressure, SpO2 (peripheral capillary oxygen saturation) before and after tourniquet release, blood loss, pain, thigh girth and function. Preoperatively there were no differences between the two limbs in all of these variables; postop, there were no differences in heart rate, mean arterial pressure, SpO2, knee pain, thigh pain, range of motion (ROM) or thigh girth. And there were no major complications. But postop differences in blood loss were significantly higher in the group where the tourniquet was used only for cementing (group one). Thigh pain in group two was slightly more than in group one during the first four days postop. And extensor lag was slightly less in group one (but only on day one)."

"In a meta-analysis of randomized trials (Alcelik et al., *The Journal of Arthroplasty,* 2012) where a tourniquet was not used, they found that the total and intraop blood loss was less with a tourniquet. But they found no difference in the duration of surgery, deep vein thrombosis, pulmonary embolism, etc."

"In a randomized clinical trial (RCT) from Taiwan (Tai et al., *The Journal of Bone and Joint Surgery* [Am], 2012) they had a greater drop in hemoglobin, hematocrit, and a higher calculated blood loss without a tourniquet. This trial (Kvederas et al., *Knee Surgery, Sports Traumatology, Arthroscopy*, 2013) used tourniquets only for cementing and found that the blood loss was higher than if they had used a tourniquet for the entire surgery. A study by Larry Dorr found no important clinical differences between using a tourniquet throughout the surgery versus using one only during cementation."

"So I would suggest using a tourniquet because it does help reduce blood loss, it provides a much better cement mantle, improves the clarity, and it does not lead to any additional complications."

Moderator Trousdale: "Dickey, can you explain why—in the last five years—there has been a surge in surgeons not using a tourniquet?"

Dr. Jones: "Maybe because I've been talking about it at this meeting for 10 years, showing the penetration of what Seth does in education. As for blood loss, tranexamic acid has been a huge game changer…who ever has to do a transfusion anymore? "

Moderator Trousdale: "The blood loss data is confounding. Arun, how do you measure blood loss intraoperatively?"

Dr. Mullaji: "It is pretty much gauged by sponges used to measure before and after. And we measure the amount of fluids given for irrigation. We added the two and subtracted the weight of the increase in sponges. Postop blood loss was what was in the drains."

Moderator Trousdale: "Those measurements are kind of a joke. I lose 3cc's during a pelvic osteotomy… that's a bit of an underestimation, right? Do you admit that there is a lot of data to support that transfusion rates are similar with or without a tourniquet?"

Dr. Mullaji: "There is so much variability. The common conclusion in most of these meta-analyses is that these studies are all flawed. And there are six different methods of calculating blood loss. I agree that things have changed with tranexamic acid, but there aren't any good studies using tranexamic acid to study blood loss with and without a tourniquet."

Moderator Trousdale: "Dickey, does it matter how thick the tourniquet is or how you put it on?"

Dr. Jones: "There is a lot of variation. If you have a very large thigh and you're trying to put a tourniquet on you will mostly get venous back bleeding and you don't get any inhibition of actual blood flow. People go 100 over their systolic pressure, but if you have a small tourniquet you're going to apply more pressure per unit area than with a large tourniquet."

Moderator Trousdale: "Arun, gives us some techniques."

Dr. Mullaji: "It's important to use a sufficient amount of padding under the tourniquet, and to inflate the pressure to about 100 more than systolic. It's important to have hypertensive anesthesia where possible because it helps to get the mean limb occlusion pres-

sure much lower. Use it only until the cement hardens and then immediately deflate it. We wouldn't use if it there are any vascular problems, any calcified vessels on the lateral X-ray, or if there are bleeding disorders, etc."

Moderator Trousdale: "Arun or Dickey, how often when you let the tourniquet down do you have a big bleeder from the inferior lateral geniculate or the middle geniculate artery?"

Dr. Mullaji: "It's not common, but it happens. It makes sense to deflate the tourniquet if you're using it before you start your closure."

Moderator Trousdale: "I'm going to take both of you to task on the cement mantle issue. Dickey, you showed the Kinamed device blowing the tibial and femoral bone nicely. And Arun, you mentioned the tourniquet in getting a good cement mantle. Do you think those differences make any clinical difference in long term durability of the total knee?"

Dr. Jones: "It does make a difference if you get better penetration. We have not been able to show that on our X-rays, however. That was done experimentally using the CarboJet system."

Moderator Trousdale: "It may look better with the tourniquet up, but does it make a clinical difference in long term durability?"

Dr. Mullaji: "I don't know. I don't think there are any studies that have proven that it makes a difference, but there is the study I presented where they found the cement mantle was thicker when utilizing a tourniquet."

Moderator Trousdale: "That's Carsten Perka's study…and he doesn't use a tourniquet on his total knees."

Dr. Jones: "A study from the American Academy of Orthopedic Surgeons showed a clear difference in the things they were measuring (in the short term)."

Moderator Trousdale: "Arun did the same study and found no difference in quad function on the two sides in patients undergoing bilateral total knees."

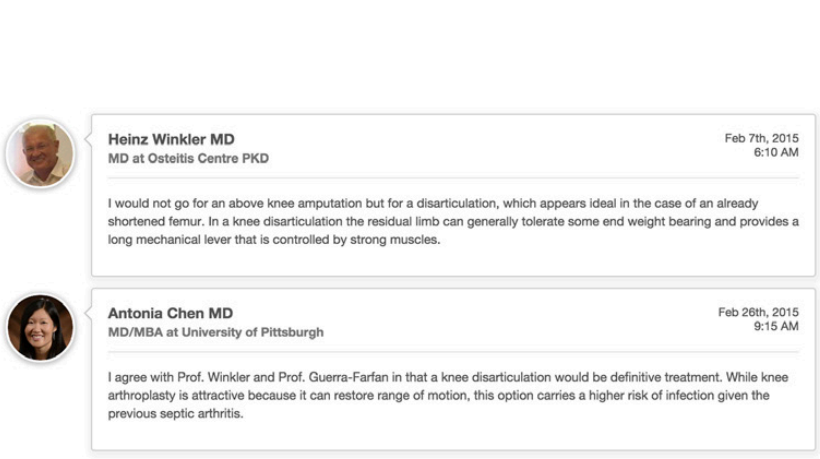
Dr. Mullaji: "So I'm not convinced that it makes a difference if you use it or you don't use it."

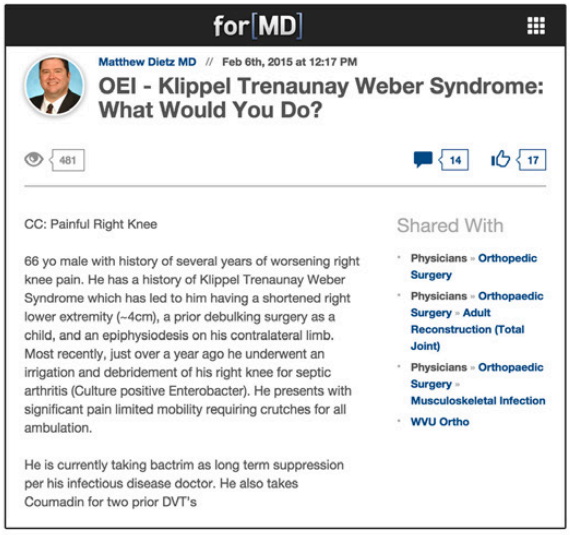
Moderator Trousdale: "Thank you, gentlemen." ◆

Please visit www.CCJR.com to register for the 2015 CCJR Spring Meeting, May 17 - 20 in Las Vegas, Nevada.

Web Platform Connects Surgeons With Fellow Trainees // New Study: Low Volume Surgeons Doing Most Reverse Shoulders // Rocky Tuan, M.D., Receives Distinguished Research Award From "Pitt"

BY ELIZABETH HOFHEINZ, M.P.H., M.ED.





for[MD], Inc.

Second Opinion Network of Superstars Alums…Online You trained with some superstars…ever wonder what *they* would do in a difficult clinical situation? Thanks to an unusual web platform, that is now possible. Greg Chang, Cofounder and CEO of for[MD], Inc., told *OTW,* "When a surgeon can consult with someone he or she trained with then there's a higher level of comfort with their feedback. Allowing residents, fellows, faculty, and alumnae to connect by specialty or subspecialty furthers clinical excellence. Our platform, for[MD], is essentially a peer-level second opinion network."

"Take a case that was recently posted. A foot and ankle surgeon who belongs to an alumnae association posted a case involving a young, morbidly obese patient with flatfoot. The person was in pain and had failed nonoperative treatment. This physician, who was a few years post fellowship, wanted feedback and utilized for[MD] to target only fellowship alumni and the mentors he trained under. The opinions of these individuals helped the surgeon provide better care."

Chang, formerly the Associate Director at Duke Orthopaedics, adds, "We have a critical mass of doctors and medical societies who are sharing vital information; we are now up to 90 organizations, including training programs, alumni associations, and medical societies. I'm proud to say that at this time one-fourth of all U.S. orthopedic surgeons are actively using our platform."

"Our goal for the next year is to expand our presence in other specialties. We have just begun working with the American Society of Neuroradiology (5,500 doctors). Eventually we want to be able to connect related specialties together, such as orthopedic spine and neuroradiology."

Surena Namdari, M.D., cofounder of Collaborative Approaches to Shoulder and Elbow Surgery [CASES] and an attending at the Rothman Institute, told *OTW,* "for[MD] has allowed CASES members to quickly seek and get informed feedback from other shoulder and elbow specialists. We use the network almost daily to think through the most complicated issues in our field and solve problems quicker. We are also investigating methods

to utilize this platform for collaborative research."

New Study Finds Low Volume Surgeons Doing Most Reverse Shoulder Arthroplasties Reverse shoulder arthroplasty—a procedure aimed at treating complex problems—is being done primarily by relatively low volume surgeons. The research was led by Judd Day, Ph.D. at Exponent, Inc., and Gerald Williams, M.D. and Joseph A. Abboud, M.D., both shoulder surgeons at the Rothman Institute (at Thomas Jefferson University). Dr. Abboud tells *OTW*, "We used the Medicare database, which allowed us to see 100% of the sample of patients for 2011, the first year that utilization data for reverse shoulder arthroplasty was made available. In making comparisons between standard shoulder arthroplasty and reverse shoulder we found that a total of 31,000 shoulder replacements were performed; 37% were reverses, 42% were standard arthroplasty, and 21% were hemiarthroplasty. We did find it surprising that reverse shoulder arthroplasty utilization was almost one to one with standard shoulder arthroplasty."

"We examined utilization patterns and found a that significant percentage of these arthroplasties are done by lower volume surgeons (those doing less than 10 per year). We found that these surgeons performed 65% of the total shoulders and 57% of the reverses. A full 70% of reverses were done by surgeons who were doing more reverses than standard total shoulders and hemiarthroplasties combined! This is concerning since reverse shoulder arthroplasty isn't so simple...it is designed for complex cases."

"My advice to my colleagues is to be careful with the surgical indications, avoid overutilization of reverse arthroplasty, and ensure that you have had advanced training before doing either procedure. Some people feel like a reverse is easier; perhaps because the surgeon thinks that he or she has to be less careful with management of the soft tissue, i.e., the rotator cuff. It is a semiconstrained prosthesis so it pops in and thus has the allure that it is potentially more stable. This might be an oversimplification of the situation, however. While the 5-10 year outcomes data on reverse shoulder arthroplasty is encouraging, there are still significant concerns for complications with this operation. In the United States we have just 'celebrated' our 10 year anniversary for FDA approval of reverse shoulder arthroplasty and we continue to analyze our 5-10 year outcomes data."

"We will be examining the 2012 data to see if the trends continue to increase (reverse over primary); we will also be looking at the breakdown of cases by surgeons."

Rocky Tuan, M.D. Receives Distinguished Research Award From Pitt

Rocky Tuan, M.D., Distinguished Professor of Orthopaedic Surgery and the Director of the Cellular and Molecular Engineering Lab at the University of Pittsburgh, has been selected to receive the 2015 Chancellor's Distinguished Research Award, Senior Scholar category. This award honors Dr. Tuan as a faculty member with an outstanding and continuing record of research and scholarly activity. Dr. Tuan's nomination was supported by many of his colleagues and peers and the selection committee was impressed by his career achievements. Awardees receive a cash prize as well as a grant to support their teaching and research.

Dr. Tuan is a Distinguished Professor of Orthopaedic Surgery and the Director of the Cellular and Molecular Engineering Lab. He is also the executive vice chairman for Orthopaedic Research and serves as the Arthur J. Rooney, Sr. Chair Professor in Sports Medicine. He is the associate director of the McGowan Institute for Regenerative Medicine and the director for the Center for Military Research. He also holds a secondary appointment as a professor within the Department of Bioengineering.

Dr. Tuan told *OTW*, "It is always most gratifying when one is recognized by one's family; in this case, the University of Pittsburgh academic family. Particularly gratifying is that the award recognizes not only the research achievements in my laboratory, but also my contributions towards enhancing the development of collaborative research programs on campus that focus on military medicine, focused on bringing therapeutic solutions to battlefield injuries."

He added, "I am most interested in developing regenerative therapies that will repair and restore musculoskeletal organs and tissues. Current approaches that utilize stem cells, bio-scaffolds are particularly interesting, since they combine biology with engineering. In fact, because of their "cross-over" nature, such research topics are very attractive to students and young scientists, the next generation of researchers."

Asked what line of research in orthopedics he finds most promising, Dr. Tuan told *OTW*, "I believe regenerative medicine, which represents convergent science, is the future of medicine, and has high promise of delivering major impacts on the practice of orthopaedics. Instead of the use of inert materials, such as metal and plastic, the future of orthopaedic surgery will entail the application of engineered biological substitutes and tissues to restore function and structure to diseased and injured musculoskeletal organ systems."

Dr. Freddie Fu, chair of Orthopedics at the University of Pittsburgh, commented to *OTW*, "Rocky Tuan is the top orthopedic scientist in the world. He worked at the NIH [National Institutes of Health] for ten years before he headed cartilage research at Pitt. Dr. Tuan leads the way in the realm of regenerative medicine. He is very perceptive, his research is superb, and he had a high level of integrity." ♦

COMPANY

Bacterin Signs Distribution Agreement for Military Facilities

Bacterin International Holdings, Inc. has signed a national distribution agreement with Spartan Medical, Inc.

A March 10, 2015 announcement from Bacterin says Spartan Medical will distribute Bacterin's proprietary product portfolio of bone graft materials to medical centers affiliated with the U.S. Department of Defense (DoD) and the U.S. Department of Veteran's Affairs (VA). Spartan Medical is a "service-disabled, veteran-owned, small business focused on distribution to government medical facilities."

"Spartan Medical is constantly on the lookout for the best products in the world that will improve surgical outcomes for those who have served," said Vince Proffitt, president of Spartan Medical. "Our relationship with Bacterin does just that and makes our Biologics offering second to none."

Melanie Head, Bacterin's vice president of sales added, "Our new relationship with Spartan Medical is both a great privilege and wonderful opportunity. It will enable us to provide our military personnel, soldiers and veterans with the biologics they deserve to enhance the quality of their lives, while also adding another experienced distribution channel to our organization."

Spartan Medical, according to the announcement, was founded in 2008 by a former Air Force Intelligence Officer "in an effort to provide an extensive armamentarium of advanced medical devices and technologies focused on the needs of the VA and DoD Surgeon." To date, the company has secured multi-year Blanket Purchase Agreements at 30 major military treatment facilities.

Bacterin is an accredited tissue bank and medical device company. The company will be in booth 2316 at the upcoming annual meeting of the American Academy of Orthopaedic Surgeons taking place in Las Vegas from March 24 to the 28, 2015. The company will be highlighting its newest allograft family, 3Demin Cortical Fibers, Boats, and Strips. — *WE*

Bacterin International Holdings, Inc.

Apple Watch Skips a Few Beats

There may be a worm in Apple's new ready-to-launch product. According to Susan Hall, writing for the *Wall Street Journal,* the sensors that measure skin conductivity and an electrocardiogram device that is intended to measure a wearer's heart, are not working reliably on the Apple watch. So those features may be dropped from the watch for the time being.

Wikimedia Commons and Justin 14

While these sensors did not work well on people with hairy arms or too dry skin, neither were they successful in tracking blood-pressure or blood-oxygen levels in their wearers.

Hall explains that the Apple watch is designed to collect and then share medical data with the wearers' healthcare providers. Despite these beginning glitches, few analysts doubt that "wearables," as they are called, will soon be close to the heart of future healthcare.

Fourteen major hospitals, according to Hall, have signed up with Apple to pilot

its HealthKit platform and will track patient care in the expectation that the process will help lower operating costs. As many as 600 developers are working on health and fitness apps that they will integrate into the Apple program. Hall quotes Apple officials as saying that the company has a "moral obligation" to "do more" with wearable health monitors and similar devices. — *BY*

Zimmer Secures Cheaper Financing for Biomet Deal

Zimmer Holdings, Inc. just lowered the cost of the acquisition of Biomet, Inc. and fortified its pocketbook to complete the deal.

The company announced on March 11, 2015 that it has agreed to sell $7.65 billion of senior notes through a consortium of Wall Street banks. The "price" of seven tranches of the notes averages about 3.2%. Bank of America analyst Bob Hopkins says that's lower than expected and will save the company borrowing costs. Hopkins said the company had previously suggested the cost of the acquisition debt would be in the 3.5% to 3.75% range.

The stated purpose of the proceeds is to finance a portion of the Biomet acquisition. The offering of the notes is, however, not conditioned upon the consummation of the Biomet deal. If the Biomet deal falls through, the company says it expects to use the net proceeds, together with cash on hand, to redeem the notes.

The offering is expected to close on March 19, 2015.

Biomet Deal Slippage

As always, the Zimmer statement said the acquisition of Biomet is expected to take place at the end of the first quarter of 2015. But this time there was more. The statement added, "or shortly thereafter, subject to applicable regulatory approvals." This is the first time the company has publicly stated that the completion of the deal may be further out than previously expected.

Hopkins said a term loan and equity will fund the balance of the total deal of $13.35 billion. — *WE*

Securities Exchange Commission

DePuy Synthes Launches "Patient Athlete" Program

Johnson & Johnson's DePuy Synthes Companies and the Human Performance Institute have developed the Patient Athlete program. The program, according to the company, is part of a J&J wellness platform that focuses on prevention, behavioral health and chronic disease support.

Patient Athlete Program/Johnson & Johnson

Alex Gorsky, J&J's chairman and CEO, announced the initiative on February 26, 2015 in Orlando at the Lake Nona Impact Forum. Gorsky said, "Our focus is on driving innovation and progressing platforms and opportunities that will improve patient outcomes, control rising health care costs and enhance the patient experience."

The Patient Athlete program, according to the company, "helps joint replacement patients take their experience beyond pain reduction to learning how to bring their full and best energy to the people and things that matter most in their lives—both before and after their surgery."

"The positive outcomes reported by both joint replacement surgeons and patients who used the program have reinforced our belief that the key to sustained behavior change requires

alignment to an individual's purpose, or what matters most in their lives," said Len Greer, president of J&J Health and Wellness Solutions. "The Patient Athlete program demonstrates how we are going beyond getting patients 'back to normal' to helping them achieve a 'better than normal' new life, reflecting our commitment to help individuals live vibrant and longer lives."

Managing Energy

A video on the company website states that dealing with the stress of pain and surgery is all about managing energy. The program uses science-based energy techniques used at the Human Performance Institute for professional athletes, surgeons and CEOs. The program includes two 15-minute videos about energy management each week for the four weeks leading up to surgery.

Tools in the program include:

- Self-guided, video-based training program led by a Performance Coach who had bilateral knee replacements and used these same concepts to enhance his own experience
- Utilizes science-based tools and techniques from the Human Performance Institute
- Eight core lessons (two per week) to complete over the four week period prior to surgery
- Ideas for immediate application with simple action steps
- Eleven refresher lessons to complete post-surgery for sustained focus and encouragement

A survey of patients who have participated in the program shows that 52% were less fearful and 70% were more confident of the surgery. Also, 55% of patients reported feeling like they recovered more quickly than expected. — *WE*

OrthoNOW Opens First Ortho Urgent Care Franchise Location

Florida-based OrthoNOW has opened its first orthopedic urgent care center franchise in Ft. Lauderdale, Florida.

OrthoNOW Weston celebrated its grand opening on March 3, 2015. The center has a team of orthopedic specialists to treat broken bones, sprains, torn ligaments and muscles, cuts, sports medicine and workers compensation injuries. The facility is equipped with full imaging equipment and offers surgical and non-surgical treatments by a team of physicians, orthopedic surgeons and orthopedic specialized ancillary providers. The center also includes an in-house digital X-ray, ARPwave for pain management and provides follow up care and rehabilitation.

The facility is open seven days a week and accepts most major insurance including Medicare.

Five More to Open in 2015

According to a company announcement on March 4, 2015, this is the first of six South Florida franchises the group will open this year. The flagship clinic is located in Doral with additional facilities scheduled to open in Aventura, Pinecrest, Kendall, Biscayne and Boca Raton by the end of 2015.

OrthoNOW was founded by its CEO, Alejandro Badia, M.D., a hand surgeon, in May 2013. It's a franchise business of specialized orthopedic urgent care centers. The centers focus on assessment and treatment of a range of orthopedic and sports medicine injuries on a walk-in basis. These injuries include anything related to the foot, ankle, knee, hip, wrist, elbow, shoulder and spine, in addition to concussion related injuries. The company recently launched the OrthoNOW mobile app for iPhone and Android featuring On My Way NOW, which allows patients to notify an OrthoNOW center that they are in route, the reason they're coming and what time they expect to arrive.

Ortho Urgent Care Franchise Business

Urgent care centers are a thriving $14.5 billion industry. But dedicated orthopedic centers are just a fraction of that market. Through such centers orthopedic surgeons are finding another way to capture the patient and remain independent from hospitals. After establishing his first flagship clinic, Badia's clinic was profitable in five months and, according to the company, has been growing at exceptionally rapid rates ever since.

Company executives told us last August that they have 40 potential franchisees in the pipeline in the Northeast, Midwest and one in Beverly Hills, California.

Orthopedics-On-Demand is growing. — *WE*

Ft. Lauderdale Mayor Judy Paul Cuts Ribbon/OrthoNOW

LARGE JOINTS

Knee OA Trial Enrolls First Subject

San Diego-based Cytori Therapeutics, Inc. has treated its first patient in its FDA approved trial assessing the effect of Cytori Cell Therapy for osteoarthritis of the knee. Peter Hanson, M.D., medical director of Orthopedic Surgery at Sharp Grossmont Hospital, took care of the patient.

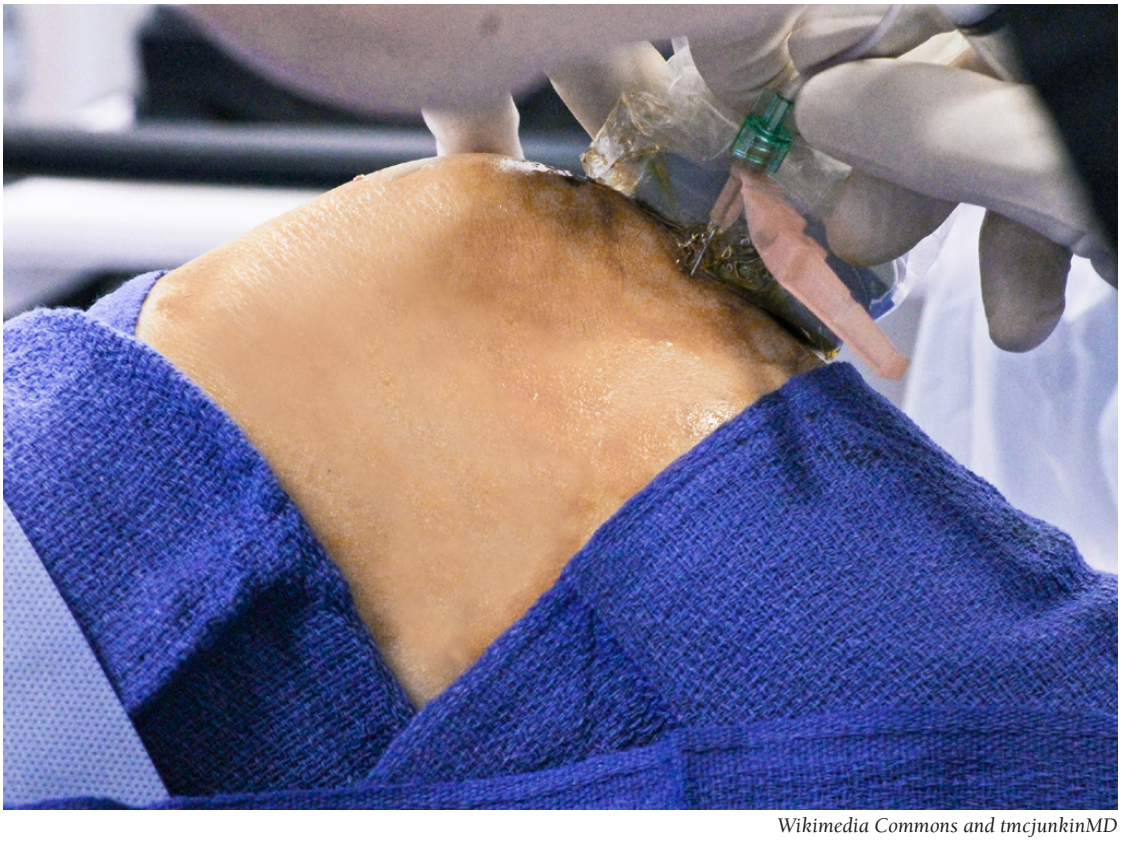
The trial, called ACT-OA, is a Phase II FDA randomized, double-blind placebo controlled trial involving 90 patients. They will be evaluated on the efficacy and safety of Cytori's autologous adipose derived therapy called ECCO-50. The trial will test both a low dose and a high dose vs. placebo and will be conducted over 48 weeks. The randomization will be 1:1:1 between the control, low dose and high dose groups.

The primary end point will be the subjects' pain on walking as measured by the Knee Injury and Osteoarthritis Outcome Score at 12 weeks. Secondary endpoints assessed will include pain, joint function, magnetic resonance imaging and adverse events.

Osteoarthritis is a disease of the entire joint involving the cartilage, joint lining, ligaments, and underlying bone. The breakdown of tissue leads to pain, joint stiffness and reduced function. Osteoarthritis is the most common form of arthritis and affects an estimated 26.9 million U.S. adults.

"Joint disease from osteoarthritis is pervasive, debilitating and significantly impacts quality of life," said Hanson. "The ACT-OA trial of Cytori's new cellular therapeutic, if successful, will fill an important gap in our clinical armamentarium between anti-inflammatory medications and joint replacement. As a surgeon who specializes in total joint replacements of the hips and knees, I have been searching for a biologic solution in order to treat my patients with something other than major surgery."

Current treatments include physical therapy, non-steroidal anti-inflammatory medications, viscosupplement injections, and total knee replacement. The American Academy of Orthopaedic Surgeon's (AAOS) guidelines for the treatment of osteoarthritis of the knee note that there were few non-surgical treatments that could be recommended. Officials of Cytori Cell Therapy see this AAOS position as highlighting the potential for their product to address what they perceive to be an inadequately addressed medical need.



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"We are enthusiastic about this new therapeutic in light of a substantial amount of preclinical, veterinary and clinical feasibility work that has been conducted thus far," said Brian Cole, M.D., a principal investigator of the ACT-OA trial, and professor, Department of Orthopedics, Department of Anatomy and Cell Biology, section head, Cartilage Restoration Center at Rush, Rush University Medical Center. "The clinical trial is well designed and I believe it has a good chance of enrolling relatively quickly given the common nature of the disease." — *BY*

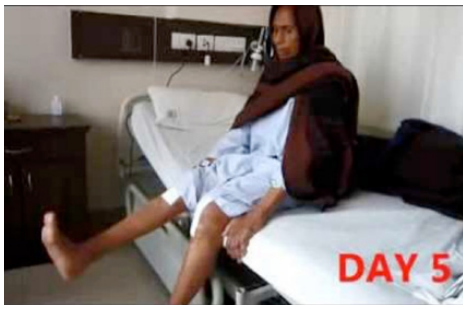
India Doc Corrects 90° Deformity

A 60-year-old woman with a 90% bone deformity in her knees was "cured" in a remarkable surgery in Gurgason, India. Rajesh Devi suffered from osteoarthritis and severe osteoporosis and the bones of her knee had become permanently deformed and were literally bent over by a full 90 degrees.

She was bedridden. Her legs could not bear her weight. To get around, she had to crawl on her arms on the floor. After examining Devi's bone condition, Vivek Logani, M.D., chief of the Joint Replacement Surgery at Paras Hospital, said that she had tight contracture of the muscles and soft tissues on the back of the knee, leaving the joint completely deformed.

A flexion deformity is an inability to straighten the knee. Knee replacement in cases of flexion deformity of 100 to 110 degrees, is a highly difficult procedure, Logani said, but he decided to give it a try.

The procedure lasted five hours. The surgeons performed soft tissue releases and ligament balancing on both the knees to correct the deformity. The procedure was successful with 80-90% of the deformity corrected during the operation. Further correction may be possible, said Dr. Logani, during post-operative rehabilitation.



Courtesy of Dr. Vivek Logani and YouTube

"The patient started walking on the second post-operative day," said Logani.

"Her muscle strengthening is progressing and on the fifth post-operative day following surgery, she was walking comfortably. Both her knees were straight, free of pain and deformity, and were bearing the full weight of her body," he added. — *BY*

Male Smokers More Likely to Have Osteoporosis, Vertebral Fractures

In a study involving 3,321 current and ex-smokers, researchers have found that men were more likely than women to have osteoporosis and fractures of their vertebrae. Smoking history and chronic obstructive pulmonary disease (COPD) were found to be independent risk factors for low bone density among both men and women. The study has just been published online in the *Annals of the American Thoracic Society.*


Wikimedia Commons and Sonia Sevilla

"Our findings suggest that current and past smokers of both genders should be screened for osteoporosis," said Elizabeth Regan, M.D., assistant professor of medicine at National Jewish Health, in the March 5, 2015 news release. "Expanding screening to include men with a smoking history and starting treatment in those with bone disease may prevent fractures, improve quality of life and reduce health care costs."

"The growing use of CT scans to screen heavy smokers for lung cancer may provide an opportunity to use the same scans for bone density screening in this high-risk population," said Dr. Regan.

Dr. Regan told *OTW*, "There were three key findings from the research which surprised me. First, we found that former smokers had significant reductions in bone density and the current screening algorithm only considers current smokers to be at risk. Second, we found that COPD and specifically emphysema was associated with reduced bone density and fractures after adjusting for other key factors. There had been hints of this in several small studies, but the findings in this large well-characterized group of smokers provided striking evidence of the relationship. The diagnosis of COPD is not currently considered as a risk factor to justify bone density screening."

"Finally, we expected that women would have the most severe bone disease because they have historically been shown to have more osteoporosis associated with aging. Our finding that men who are current or former smokers, actually have more bone disease and more fractures was a total surprise. It appears to me that men should be reconsidered when screening decisions are addressed and careful attention should be given to the method used to assess bone density in men." — *EH*

Stepped Care Helps Vets With Musculoskeletal Pain

A new study has found that a stepped-care strategy improved function and decreased pain severity in veterans of Iraq and Afghanistan, producing at least a 30% improvement in pain-related disability. The researchers, from the Richard L. Roudebush VA Medical Center in Indianapolis, the Regenstrief Institute and the Indiana University School of Medicine, led the randomized controlled ESCAPE trial (Evaluation of Stepped Care for Chronic Pain).

"Pain is disabling and interferes with daily living as well as the ability to work," said Matthew Bair, M.D., the VA and Regenstrief Institute investigator and IU associate professor of medicine who led the randomized controlled ESCAPE trial, in the March 9, 2015 news release. "It is a critical health issue among veterans, many of whom had multiple, often lengthy deployments."

Dr. Bair, an internist who treats veterans in primary care and is a health services researcher, was a U.S. Army physician for eight years. "Many have significant long-term pain. We know that medications alone are only modestly successful in helping them; current pain treatments haven't made much of a dent. The decrease in pain severity and 30 percent improvement in pain-related disability we achieved in the ESCAPE study are clinically significant, and we found that improvement lasted for at least nine months."

This study included 241 veterans of Operations Enduring Freedom, Iraqi Freedom and New Dawn who suffer from musculoskeletal pain of the back, knee, neck or shoulder. The two-step program, created by Dr. Bair and colleagues, involved analgesics, self-management strategies and cognitive behavioral therapy. Nurse care managers phoned the veterans, helping them develop healthier thought patterns. They also helped the veterans better understand that while their pre-deployment level of activity wasn't possible at the time, a substitute activity like swimming might be within their reach and may decrease their pain.

Veterans enrolled in the ESCAPE program experienced an improvement in their function and a decrease in their pain severity and pain interference (how pain interferes with mood, physical activity, work, social activity, relations with others, sleep and enjoyment of life).

According to the news release, "The authors report that patients randomized to the innovative two-step approach spoke of an evolving understanding of their pain experience during the trial, and of how this new understanding helped them manage their pain more effectively."

Wikimedia Commons and Cpl. Daniel Riley

Asked about evidence-based psychological treatments used, Dr. Bair told *OTW*, "There were six sessions of nurse-delivered cognitive behavioral therapy."

As for whether the patients will continue using the tools they acquired if left without support, Dr. Bair noted, "Some will continue using these tools without support, but based on our previous studies many need the support, encouragement, and accountability from a care manager to continue to use the tools."

— *EH*

SPORTS MEDICINE

Treadmill OK Sub for Outdoor Running

With running tracks blanketed under feet of snow in much of the country, runners are asking if running on a treadmill might be a good substitute for outdoor training. Exercise physiologist Reed Ferber, director of the running injury clinic at the University of Calgary in Canada, told Liz Neporent of *Good Morning America* that, for the average runner, the difference between them "doesn't mean much."

"You have more forward lean from your trunk and more flexion at the hips and knees when you run on a treadmill because you don't need to generate as much power at the same speed as you do running on level ground outdoors." he said. According to Neporent, studies show that there are tiny differences in the amount of calories burned while a subject is running at the same speed and incline on a treadmill as compared to running outdoors.

No one has yet looked at the types of injuries a runner may experience on a treadmill versus running outdoors. Ferber cautions runners who spend their winters on the treadmill to cut their mileage in half when they finally get back out on the road.

The reason, he explained, is that when runners run outdoors, their calf muscles produce about 80% of the forward propulsion power. This drops significantly when a runner is on a treadmill because the ground moves underneath the runner. "When you transition from the treadmill to the road, you could be at risk for calf strains, plantar fasciitis and Achilles tendonitis," he said. — *BY*

Wikimedia Commons and Brandon Wiggins

REIMBURSEMENT

Affordable Care Act Price Drops 29%

The Affordable Care Act (aka Obamacare) just got 29% more affordable.

According to the nonpartisan Congressional Budget Office (CBO), slowing healthcare costs due to slower rising insurance premiums and fewer people than were previously thought to be without insurance, are driving down the price of the law.

Estimates by the CBO released on March 9, 2015 reduce the projected cost of the Act by $142 billion over the next decade. That's 11% lower than previous estimates. The budget office still expects 24 million to 25 million people a year to get coverage under the law.

U.S. Capitol/Congressional Budget Office

Slowing Healthcare Costs

According to the CBO, spending on healthcare increased by an average of 5% per year between 1998 and 2005, adjusting for inflation and demographics. That figure fell to 1.8% per year for the period from 2006 to 2013, the latest year for which data are available.

The CBO report says the healthcare law will cost the federal government $1.2 trillion over the next decade. The agency has been steadily reducing the projected cost of the law since it was enacted 2010. In 2010, the agency projected that the insurance-

related provisions of the health law would cost the federal government $710 billion from 2015 through 2019. The most recent projections put the five-year cost at $506 billion, a reduction of 29%.

A White House spokesperson said the projections are the "latest in a long line of data points" that show the law was holding down health costs and generating economic benefits. He said one of the goals of the legislation was to address the threat that growing health costs pose to the broader economy.

Silver Tsunami Budget Deficits

While good news for the healthcare law and resulting in $431 billion less in annual budget deficits than previously thought, deficits will soar again in the next decade as more baby boomers retire and start receiving Social Security and Medicare. In 2025, the budget office says the annual deficit will once again hit $1 trillion, unless Congress acts. The annual deficit hit a record $1.4 trillion in 2009 as the government borrowed heavily to stimulate a struggling economy.

The deficit dropped to $485 billion in the budget year that ended last September.

The CBO cautioned about the uncertainties of projecting healthcare spending, stating, "Projections of spending by private health insurers are highly uncertain, especially because the causes of the pronounced slowdown in spending in the past several years are not well understood. Projections of growth in premiums for private health insurance offered through the exchanges are even more uncertain because the exchanges are so new." — *WE*

PEOPLE

Charles Bush-Joseph, M.D. Honored by National Athletic Trainers Association

Charles Bush-Joseph, M.D., Medical Director at Midwest Orthopaedics at Rush (MOR) and head team physician for the Chicago White Sox, has been awarded an honorary membership from the National Athletic Trainers Association (NATA). According to the MOR website, "The award is given once a year to individuals who have shown profound interest in and have significant contributions to the profession of athletic training. They also display a dedication to advancing, promoting and championing the efforts of the association and its membership."

An associate team physician for the Chicago Bulls, Dr. Bush-Joseph has cared for high school, collegiate and recreational athletes as a MOR physician partner for more than 30 years. He is also a professor at Rush University Medical Center and associate director of the Rush Orthopaedic Sports Medicine Fellowship Program. Dr. Bush-Joseph is also a member of the Major League Baseball Medical Advisory Board and was president of the Major League Baseball Team Physician Association in 2012.

Dr. Bush-Joseph told **OTW**, "To receive this recognition from the National Athletic Trainer's Association is a great honor. The NATA represents over 35,000 athletic trainers worldwide who work with, treat, and train athletes of every level, every day. As one of only three physicians inducted into their society for 2015, I find myself in exclusive company and cherish the honor."

Charles Bush-Joseph, M.D., courtesy Midwest Orthopaedics at Rush

"In my first year of practice as a volunteer physician for a local high school, the experienced athletic trainer took me under his wing and allowed me to gain experience in his training room for the care and treatment of his athletes. Over the past 25 years I have had the good fortune to work with many skilled trainers at every level including those caring for professional athletes. The efficiency, skill, compassion, demonstrated by these professionals are the same I pass on to our orthopedic residents and fellows." — *EH*

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