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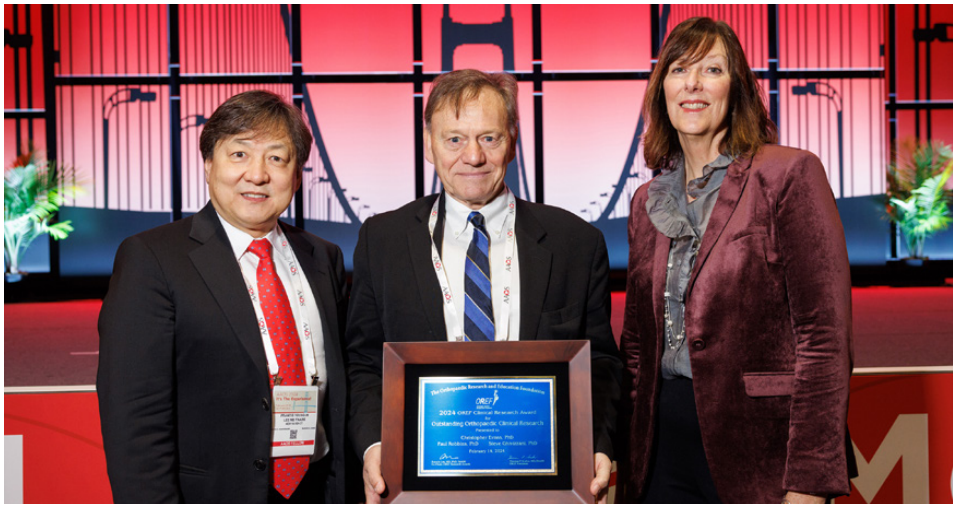
Orthopedics This Week

WEEK IN REVIEW



BREAKING NEWS

For all news that is ortho, read on.

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Orthopedic Power Rankings

Robin Young's Entirely Subjective Ordering of Public Orthopedic Companies

THIS WEEK: AAOS was strong in several important ways, but it's clear that medical education and trade shows are shrinking—the key question for the organizations that sponser them is, can you manage your fixed costs down in sync with a leaner revenue future? For B2B companies, AAOS was great. For companies who sell to surgeons, the message is that they, too, must diversify the methods by which they engage with current and prospective surgeon customers. AAOS will always be the premier ortho meeting, but, for suppliers The Academy will increasingly exist within a portfolio of engagement programs.

RANK	LAST WEEK	COMPANY	TTM OP MARGIN	30-DAY PRICE CHANGE	COMMENT
1	8	Bioventus	(5.33%)	12.90%	Big jump this week as investors are getting to know the new CEO, Robert Claypoole. Yes, it's a honeymoon. But BVS is ready for a rebound and recovery.
2	1	Smith & Nephew	10.06	(5.74)	OOPS! Decent, 6.8%, Q4 sales growth. But, oh my!, that 30% earnings miss. On the positive side, cash flow increased dramatically. A $300 million jump over 2022. And, that great dividend yield.
3	4	Zimmer Biomet	19.31	(1.27)	Ivan Tornos was absolutely EVERYWHERE at AAOS. The top guy sets the tone and this is a new ZBH. Younger team with an eye on moving ZBH into a leadership position for the coming decades.
4	5	Pacira Biosciences	12.86	(11.45)	PCRX just gets cheaper and cheaper—despite reporting $675 million in sales, expanded indications for flagship Exparel, 164% increase in earnings and a new CEO.
5	2	Integra LifeSciences	17.32	(10.36)	The Boston plant shut down still washed through IART's numbers for 2023, sales declined 1.0% and earnings took a hit. But operations are recovering and should at "normal" by mid-year.
6	6	Axogen	(9.75)	10.55	It's been a hell of run for Axogen's stock. Profit taking started a couple weeks back. Investors will get more details this week when management holds its earnings call.
7	NR	XTANT	(13.53)	27.17	Massive price increase for XTANT—one of the gem companies in ortho and spine, based in beautiful Montana. Investors are expecting very good news when management reports 2023 year end numbers.
8	10	JNJ	19.22	2.03	As a value stock, JNJ checks the boxes, especially dividend yield. Ortho and spine performance is a mixed bag. Market share slipped in both knees and hips, but overall procedure volume was strong.
9	3	Orthofix	(8.51)	(6.41)	Wall Street will take a while to move past the management shake up of 2023. Good news...and early bird investors take note...new CEO hugely impressive. Employees and distributors enthusiastic. Patience for now.
10	NR	Globus Medical	12.74	3.14	GMED back on the Power Rankings. Big presence at AAOS—as a recon and trauma company. David Paul's ambition is to be #1 in all ortho and spine. Q4 sales up 10.3%.

Robin Young's Orthopedic Universe

TOP PERFORMERS LAST 30 DAYS

	COMPANY	SYMBOL	PRICE	MKT CAP	30-DAY CHG
1	MicroPort Scientific	0853	$0.95	$1,734	28.07%
2	Xtant Medical Hldgs	XTNT	$1.17	$152	27.17%
3	Bioventus	BVS	$4.90	$386	12.90%
4	AxoGen	AXGN	$10.69	$460	10.55%
5	OrthoPediatrics Corp	KIDS	$28.07	$656	7.47%
6	Anika Therapeutics	ANIK	$25.14	$368	6.89%
7	Stryker	SYK	$353.22	$134,317	5.29%
8	Globus Medical	GMED	$54.45	$7,371	3.14%
9	Johnson & Johnson	JNJ	$162.12	$390,509	2.03%
10	Zimmer Biomet	ZBH	$124.01	$25,432	-1.27%

WORST PERFORMERS LAST 30 DAYS

	COMPANY	SYMBOL	PRICE	MKT CAP	30-DAY CHG
1	Alphatec Holdings	ATEC	$13.42	$1,852	-16.59%
2	ConMed	CNMD	$79.95	$2,461	-16.37%
3	SI-BONE, Inc	SIBN	$17.08	$701	-15.49%
4	Nevro Corp	NVRO	$14.22	$518	-14.13%
5	Pacira Biosciences	PCRX	$28.86	$1,342	-11.45%
6	Integra LifeSciences	IART	$35.99	$2,815	-10.36%
7	SINTX Technologies	SINT	$0.14	$3	-9.55%
8	Aurora Spine	ASG.V	$0.25	$18	-6.68%
9	Orthofix	OFIX	$13.00	$478	-6.41%
10	Smith & Nephew	SNN	$26.42	$11,550	-5.74%

LOWEST PRICE / EARNINGS RATIO (TTM)

	COMPANY	SYMBOL	PRICE	MKT CAP	P/E
1	Johnson & Johnson	JNJ	$162.12	$390,509	19.51
2	Medtronic	MDT	$83.60	$111,006	19.81
3	Pacira Biosciences	PCRX	$28.86	$1,342	24.98
4	Zimmer Biomet	ZBH	$124.01	$25,432	26.21
5	Globus Medical	GMED	$54.45	$7,371	30.05

HIGHEST PRICE / EARNINGS RATIO (TTM)

	COMPANY	SYMBOL	PRICE	MKT CAP	P/E
1	Medacta	MOVE	$143.67	$2,873	54.93
2	Smith & Nephew	SNN	$26.42	$11,550	43.92
3	Integra LifeSciences	IART	$35.99	$2,815	41.56
4	Stryker	SYK	$353.22	$134,317	38.02
5	ConMed	CNMD	$79.95	$2,461	35.59

LOWEST P/E TO GROWTH RATIO (EARNINGS ESTIMATES)

	COMPANY	SYMBOL	PRICE	MKT CAP	PEG
1	Smith & Nephew	SNN	$26.42	$11,550	-5.49
2	ConMed	CNMD	$79.95	$2,461	1.40
3	Globus Medical	GMED	$54.45	$7,371	1.86
4	Medacta	MOVE	$143.67	$2,873	1.97
5	Pacira Biosciences	PCRX	$28.86	$1,342	2.17

HIGHEST P/E TO GROWTH RATIO (EARNINGS ESTIMATES)

	COMPANY	SYMBOL	PRICE	MKT CAP	PEG
1	Medtronic	MDT	$83.60	$111,006	5.69
2	Integra LifeSciences	IART	$35.99	$2,815	4.72
3	Johnson & Johnson	JNJ	$162.12	$390,509	4.15
4	Zimmer Biomet	ZBH	$124.01	$25,432	3.78
5	Stryker	SYK	$353.22	$134,317	3.45

LOWEST PRICE TO SALES RATIO (TTM)

	COMPANY	SYMBOL	PRICE	MKT CAP	PSR
1	Dynatronics Corp	DYNT	$0.49	$2	0.06
2	Bioventus	BVS	$4.90	$386	0.75
3	Aurora Spine	ASG.V	$0.25	$18	0.92
4	ZimVie	ZIMV	$16.93	$459	1.00
5	Orthofix	OFIX	$13.00	$478	1.04

HIGHEST PRICE TO SALES RATIO (TTM)

	COMPANY	SYMBOL	PRICE	MKT CAP	PSR
1	Medacta	MOVE	$143.67	$2,873	6.57
2	Stryker	SYK	$353.22	$134,317	6.55
3	OrthoPediatrics Corp	KIDS	$28.07	$656	5.36
4	SI-BONE, Inc	SIBN	$17.08	$701	5.05
5	Globus Medical	GMED	$54.45	$7,371	4.70

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

OA Gene Therapy Wins 2024 OREF Research Award

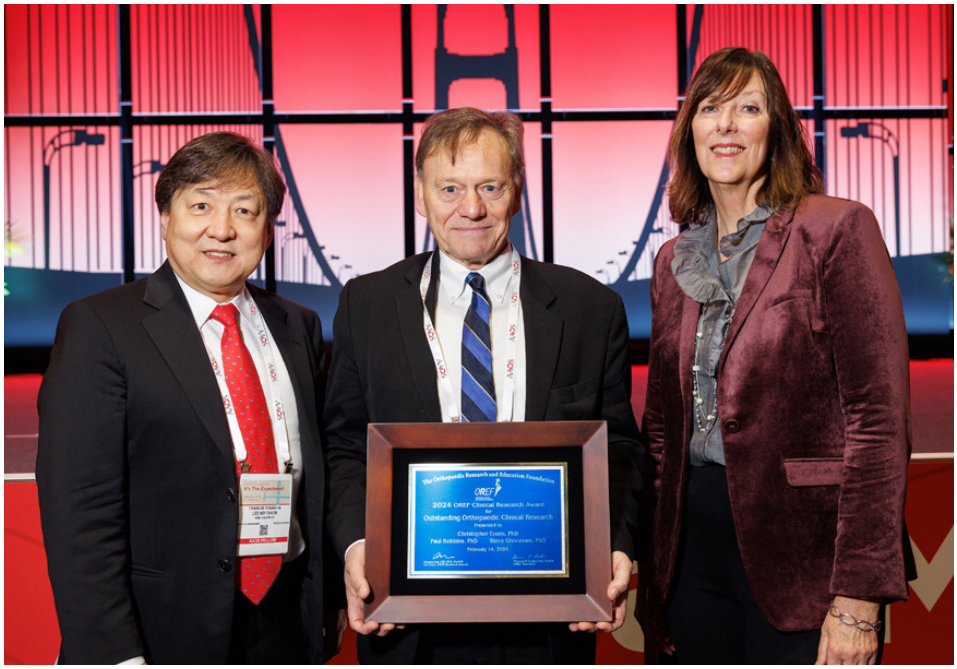
BY ELIZABETH HOFHEINZ, M.P.H., M.ED.

The 2024 Orthopaedic Research and Education Foundation (OREF) Clinical Research Award has been presented to Christopher H. Evans, Ph.D. (Mayo Clinic), Steven C. Ghivizzani, Ph.D. (University of Florida), and Paul D. Robbins, Ph.D. (University of Minnesota), for their groundbreaking research on local gene therapy for osteoarthritis (OA).

For more than 30 years, this team spearheaded and shepherded osteoarthritis gene therapy research from laboratory concept to human clinical trials. The OREF Award recognizes outstanding clinical research related to musculoskeletal disease or injury.

"Gene therapy was focused on curing genetic diseases when we entered the field," said Dr. Evans, John and Posy Krehbiel Professor of Orthopedics, Mayo Clinic, and Professor of Molecular Medicine, Mayo Clinic Alix School of Medicine in Rochester, Minnesota.

"At the time, studying gene therapy for arthritis was radically different because, instead of treating a genetic disease, we were looking at treating a non-genetic one, albeit one of the most common diseases on the planet. This was not a genetic fix, but we wanted to explore a sophisticated way of delivering anti-arthritic gene products to those who need therapy as there were not many treatment advances for OA."



Francis Lee, M.D., Ph.D., M.B.A., Christopher H. Evans, Ph.D., Kristin Power, Director of Kappa Delta Foundation / Courtesy of the American Academy of Orthopaedic Surgeons

From Concept to Clinical Trials

Initially the research team targeted rheumatoid arthritis (RA) and achieved the first-in-human transfer of a gene to a joint. With the rise of non-genetic RA treatments, however, the team shifted its focus to OA.

OTW asked Dr. Evans to explain the gene transfer process. "The gene transfer process involves genetically modifying a harmless virus (Adeno-associated virus; AAV) so that it carries DNA ('gene') that encodes the therapeutic protein product of interest, in our case the interleukin-1 receptor antagonist (IL-1Ra)," he explained.

"The modified virus is then injected into the joint with osteoarthritis where the virus delivers its genetic payload to cells within the joint, including synovial cells and chondrocytes. As a consequence, these cells then produce IL-1Ra which accumulates locally within the joint at therapeutic concentrations in a sustained fashion."

"The most challenging part concerns the gene transfer technology, especially which vector to use to transfer the gene into cells within the joint. During the extended pre-clinical development of this project, we tried many different types of vectors, both viral and non-viral. And after the best vector was identified, manufacturing clinical grade material was another huge challenge."

The researchers filed an Investigational New Drug application with the FDA in 2015. In a Phase I clinical trial, nine

patients (three cohorts) were injected with scAAV.IL-1Ra in escalating doses of 10 (low dose), 10 (medium dose), or 10 (high dose) by an intra-articular injection into one knee joint with OA. Eligible patients had mid-stage disease, symptomatic OA and failed at least two conservative treatments prior to the study.

Partial outcomes included:

- No serious adverse events were reported.
- Patients reported improved symptoms based on VAS and WOMAC. Patients who received the lowest dose reported mild and temporary improvement. Patients who received the medium and high doses saw sustained symptomatic improvement during the entire 12-month follow-up timeframe.
- Expression of IL-1Ra, a natural anti-inflammatory protein, was higher in the high-dose and medium-dose groups. This elevated expression in these groups was sustained through the 12 months of follow up, suggesting that the 10 dose could be the most cost-effective dose, but further investigation is needed.

"This was the first study that used localized gene therapy, meaning we could deliver the therapeutic target directly to the joint, which has enormous implications for safety and significantly reduces the cost associated with this procedure/therapy," said Dr. Evans.

"By focusing on the joint, you don't have to treat the whole body as many of the previous vectors delivered systemically go straight to the liver, causing liver damage. The amount of vector we delivered to the knee is significantly less than what is used in systemic diseases, which cuts down on the cost dramatically."

OTW asked Dr. Evans whether the level and persistence of IL-1Ra expression in the joint may be affected by immune suppression?

"Although we have fiddled around with the DNA sequence of the gene," said Dr. Evans, "the IL-1Ra protein we express is identical to the IL-1Ra protein produced naturally by the body. For this reason, it should not be recognized as foreign by the immune system and therefore not affected by immunosuppression."

Added Dr. Evans, "This was the first suggested use of gene therapy to treat a disease that is not a genetic disease or cancer!" ♦

Joshua J. Jacobs, M.D., Receives AAOS Tipton Leadership Award

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

Joshua J. Jacobs, M.D., FAAOS / The American Academy of Orthopaedic Surgeons

Joshua J. Jacobs, M.D. FAAOS, the William A. Hark, MD/Susanne G. Swift Professor and Chairman Emeritus of the Department of Orthopaedic Surgery at RUSH University Medical Center in Chicago, has been honored with the American Academy of Orthopaedic Surgeons (AAOS) 2024 William W. Tipton., Jr., MD, Leadership Award.

This award recognizes AAOS members who have demonstrated outstanding leadership qualities that have benefitted the orthopedic community, patients and/or the American public. The award honors and celebrates the life, accomplishments and qualities of the late William W. Tipton Jr., MD, an orthopedic surgeon, educator, and former AAOS chief executive officer.

"It is a profound honor to be recognized by my peers for the contributions I have made to the profession over the last three decades," stated Dr. Jacobs to *OTW*. The chairman at RUSH for 16 years, Dr. Jacobs added, "I have been blessed to have had the opportunity to be an orthopaedic surgeon, using all the knowledge and skills I acquired during my formal education and graduate medical education training to improve the quality of life for patients who have entrusted me with their care. I feel strongly that it is incumbent on me to give back to the profession that has given me so much."

Dr. Jacobs's other roles at RUSH includes Vice Provost for Research of RUSH University and the Vice President for Research at RUSH University Medical Center. He has also served as the Vice Dean for Research of RUSH Medical College since 2015.

With over 290 peer-reviewed articles published, Dr. Jacobs is now heading up two large, multicenter National Institutes of Health (NIH) grants and has received numerous awards for his research. As

program director for RUSH's orthopedic surgery residency program for 15 years, Dr. Jacobs has mentored numerous trainees and research faculty.

Dr. Jacobs is a past president of AAOS (2013–2014) and past vice president of the American Board of Orthopaedic Surgery (2019–2020). He was also president of the Orthopaedic Research Society (2006-2007), president of The Hip Society (2019-2020 and is the incoming president of the Orthopaedic Research and Education Foundation.

Asked what lasting leadership lesson from Dr. Tipton he has retained, Dr. Jacobs commented to *OTW*, "I learned many leadership skills from Dr. Tipton. The leadership lesson that has impacted me the most is to practice 'active listening'. Dr. Tipton believed that good leaders listen more than they talk. He taught me that communication efficacy—ensuring that each party is fully understood—is a key component of being a successful leader."

As for words of advice on leadership to younger orthopedic surgeons, Dr. Jacobs told *OTW*, "Individuals are not born leaders. They become leaders by virtue of being good followers. Choose the mentors that you follow carefully, ensuring that they reflect your core values and aspirations. Nurture the mentor/mentee relationship so that it is a two-way street. As a mentor of young orthopaedic surgeons myself, I have learned a great deal from those that I have had the privilege to mentor." ◆

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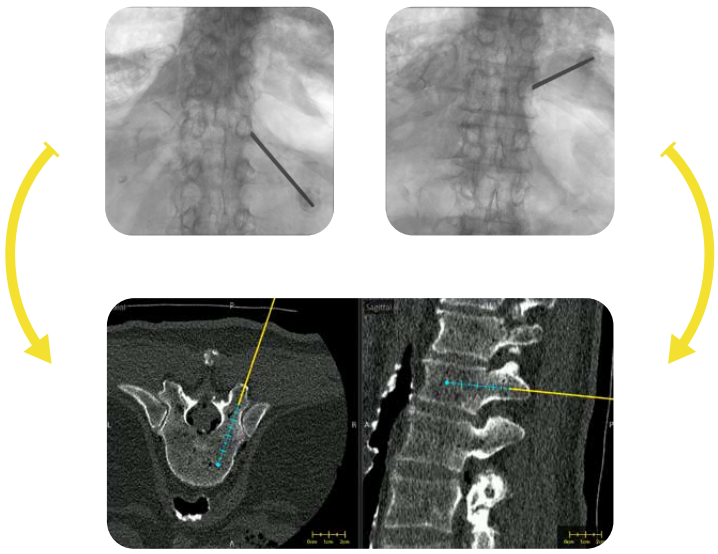

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Top Outpatient Ortho Hospitals for 2024

BY KIM DELMONICO

Healthgrades has released its list of 2024 top hospitals for outpatient surgery.

Healthgrades is focused on helping consumers evaluate hospital quality. Its analysis utilizes patient outcome data from nearly every hospital in the United States.

This year, Healthgrades expanded its analysis of patient complication rates for outpatient orthopedic surgeries to include four areas: total knee replacement, total hip replacement, rotator cuff surgery, and back and neck surgeries.

Healthgrades list of top hospitals for outpatient surgical care included Healthgrades Outpatient Joint Replacement Excellence Award. This award was granted to 152 hospitals representing the top 10% in the nation. Its analysis also revealed five-star ratings for outpatient total knee replacement and outpatient total hip replacement.

This year Healthgrades also introduced a new award and five-star ratings. The new award was the Healthgrades Outpatient Orthopedic Surgery Excellence Award. It was granted to 134 hospitals representing the top 10% in the country. The new five-star ratings included outpatient rotator cuff surgery and outpatient back & neck surgery.

The analysis may be valuable to consumers, giving insight into patient outcomes across facilities. When selecting a facility, consumers may be able to use the lists for guidance as to where they may find "significantly better-than-expected outcomes" for outpatient procedures.

Source: Healthgrades

According to Healthgrades, "Patients treated at hospitals that received a 2024 Outpatient Joint Replacement Specialty Excellence Award have, on average, approximately 38% lower risk of experiencing a complication than if they were treated at non-recipient hospitals." Additionally, "Patients treated at hospitals that received a 2024 Outpatient Orthopedic Surgery Specialty Excellence Award have, on average, approximately 40% lower risk of experiencing a complication than if they were treated at non-recipient hospitals."

In 2024, only one hospital in the United States achieved five-star ratings for total knee replacement, total hip replacement, rotator cuff surgery, and back and neck surgery. Hospital for Special Surgery (HSS) claimed this achievement.

HSS President, CEO, and Surgeon-in-Chief Emeritus Bryan Kelly, M.D., MBA commented, "As outpatient surgery options become more available, it is very important that consumers have trustworthy guidance on the facts and implications of quality differences."

Dr. Kelly continued, "HSS appreciates this unique recognition by Healthgrades, and its potential to help consumers make better choices about their care and encourage all providers to prioritize quality improvement." ♦

COMPANY

Synergy Spine Solutions Closes $30M Series A

Synergy Spine Solutions, a spine technology company based in Louisville, Colorado, has closed a successful $30 million Series A financing round.

Private investment company Amzak Health led the financing round and was joined by other investors. Amzak Health is a new institutional investor and with the investment, Amzak Health Managing Partner Joyce Erony joined the Synergy Board of Directors.

Erony commented, "We believe in Synergy's dedication to advancing patient care and reshaping the landscape of cervical disc replacement."

Erony continued, "We are very excited to be a part of their evolution and future growth."

Synergy is focused on artificial cervical disc replacement and its flagship cervical disc arthroplasty product Synergy Disc®. According to its website, the Synergy Disc is "designed to restore physiologic motion and correct sagittal balance." In June 2023, Synergy completed enrollment for the Synergy Disc 1-level investigational device exemption (IDE) clinical trial.

Source: Synergy Spine Solutions

According to the company, the proceeds will fund "enrollment of Synergy's U.S. IDE 2-level clinical trial" and continuing "patient follow-up on both the 1-level and 2-level clinical trials." The funds will also be used to submit Premarket Approval applications to the U.S. Food and Drug Administration and bolster ongoing commercialization in markets outside the U.S.

Synergy Spine Solutions CEO Josh Butters expressed excitement about the funding, stating, "We are excited about this next chapter of Synergy's growth."

Butters continued, "We look forward to welcoming Amzak Health to the Synergy team that has worked incredibly hard to get to this point. We remain focused on completing the 2-level study and to bringing the Synergy Disc to the U.S. market, as it represents an important treatment option for patients suffering from degenerative disc disease and was specifically designed to restore both motion and alignment to the cervical spine."

OTW spoke with Timothy Hein, Synergy Spine Solutions Vice-President of Sales and Marketing about the financing round. Hein told us that Synergy sets itself apart from its competitors because, "The Synergy Disc® advances the standard of care for cervical artificial disc replacement devices, as it is the first disc to restore both alignment and balance while preserving motion."

Hein also noted that, "In 2024 Synergy will continue to expand sales outside the United States and complete enrollment in its 2-Level FDA trial in the United States." — *KD*

LEGAL

Stark Law Updates Certain Compensation Limits

The Centers for Medicare and Medicaid Services (CMS) has updated certain exceptions to the physician self-referral law (also known as the "Stark Law") which will affect certain compensation limits.

Source: Pexels and Monstera Production

The compensation limits for certain non-monetary compensation, medical staff incidental benefits, and limited remuneration to a physician are adjusted each calendar year. These compensation limits, according to the CMS website, "are adjusted each calendar year to the nearest whole dollar by the increase in the Consumer Price Index-Urban All Item (CPI-U) for the 12-month period ending the preceding September 30."

Under the federal Stark Law, hospitals, physician groups, labs, and other provider entities may provide non-monetary compensation to physicians (such as entertainment or meals). For the calendar year of 2024, the non-monetary compensation limit has increased to $507 (from $489 in 2023). The non-monetary compensation must meet certain conditions. Violation may result in penalties. In some instances, it may be possible to return the excess amount.

Under the Stark Law there is also a medical staff incidental benefit exception. It may be used to cover certain incidentals the hospital provides to a member of the medical staff while that individual is on campus. It applies to items or services. It does not include cash or cash equivalents. The value of any medical staff incidental benefit is now less than $44 per occurrence (in 2023 it was less than $42). The compensation may be provided if certain conditions are met.

The limit on aggregate remuneration to a physician is also increased each year from its original $5,000 limit to adjust for inflation. For 2024 it has increased to $5,913 (from $5,702 in 2023). This limit applies to arrangements where an entity pays compensation to a physician in exchange for items or services. There are certain limitations and conditions that must be met for the exception to apply.

What are your thoughts on these increases? — *KD*

MultiCare Faces False Claims Act Allegations

The United States and State of Washington have filed a complaint in intervention against MultiCare Health System alleging that MultiCare violated the False Claims Act, Washington

Source: MultiCare, United States Attorney's Office Eastern District of Washington, Washington Secretary of State

State False Claims Act, and knowingly endangered patient safety.

MultiCare is a Tacoma, Washington-based hospital and healthcare system that owns and operates MultiCare Deaconess Hospital and MultiCare Rockwood Clinic.

The complaint alleges that MultiCare knowingly caused the submission of false and fraudulent claims to Medicare, Washington Medicaid, and other federal health care programs. It claims that the false claims were for surgical procedures performed by neurosurgeon Jason A. Dreyer, D.O. between 2019 and 2021.

The complaint asserts that there were "red flags, warnings, and specific evidence of Dr. Dreyer's dangerous and fraudulent behavior." All of which it asserts was "known to MultiCare while hiring, credentialing, employing, and supervising Dr. Dreyer."

There are a number of specific examples of Dr. Dreyer's purported behavior that are included in the complaint. First, the State is asserting that "Dr. Dreyer had previously been suspended and placed on extended administrative leave by, and resigned from, Providence St. Mary's Medical Center" and that this was supposedly based on "concerns that Dr. Dreyer had over-operated and performed medically unnecessary surgeries."

Next, prosecutors are claiming that when MultiCare employed Dr. Dreyer he was under investigation by the Washington State Department of Health, for "practicing below medical standards of care." It is also asserted that when MultiCare employed Dr. Dreyer, he was under federal investigation for "fraudulent billing supported by falsified diagnoses at Providence St. Mary." Additionally, the complaint purports that "multiple MultiCare medical providers with direct knowledge of Dr. Dreyer's spinal surgeries at MultiCare had internally raised concerns to MultiCare that Dr. Dreyer was conducting medically unnecessary spinal surgeries and endangering patients."

In a press release for the U.S. Attorney's Office, Eastern District of Washington, United States Attorney Vanessa Waldref said, "As alleged in the Complaint, MultiCare was aware of serious concerns that Dr. Dreyer was putting patients in danger."

Waldref continued, "The Complaint alleges that MultiCare nonetheless made the decision to allow him to treat and operate on patients, even after it became aware of the federal investiga-

tion. This is an egregious breach of the public trust."

For *OTW*'s coverage of past litigation involving Dr. Dreyer, see "Lawsuit Alleges Neurosurgeons Performed Unnecessary Procedures." — KD

LARGE JOINTS

Enovis Rolls Out the Innovative DonJoy ROAM OA Knee Brace

Wilmington, Delaware-based Enovis™ Corporation is launching the very innovative DonJoy® ROAM™ OA knee brace for patients with osteoarthritis (OA) or other knee pain and instability. Its key feature is that it addresses a broader patient population by incorporating a number of innovative technologies and features.

ROAM OA is an "unloader bracing system" meaning that it shifts weight away from a unicompartmental arthritic knee to relieve pain, improve stability and help improve mobility. It is, of course, meant for conservative care, but its innovative design allows it to be an unloader brace for a broader range of patients who seek conservative preop care or postoperative knee protection.

Enovis DonJoy® ROAM™ OA knee brace
Courtesy of Enovis™ Corporation

"By the time osteoarthritis patients actually seek medical care, they usually have a significant amount of pain," said orthopedic surgeon and pro sports team physician Brian J. Cole, M.D. "Braces like the ROAM OA can provide the support and relief patients need to get back to the activities they love, without having surgery."

ROAM OA Key Innovations:

- "Mag-align" magnetic clips, which more easily align the strap connection points as the patient is putting the brace on, despite, for example, eyesight or dexterity challenges. Again, addressing the needs of a broader patient population.
- "Set-and-Forget" technology which allows patients to put the brace on and off without changing any provider settings.
- BOA® Fit System lets patients easily dial support and pain relief up or down, on demand.
- Slim profile hinge design. Patients can confidently wear it beneath clothing.
- Dynamic strapping and unique condyle harness completely avoids sensitive skin in the popliteal (back of the knee) space, while providing comfortable pressure to activate proprioception on the opposite side of the knee with maximal unloading during extension.
- Anti-migration technology uses soft silicone keeping the brace comfortably in place.
- 2X Cool Technology fibers feel comfortable on the skin by keeping the surface 2 degrees cooler than the environment.
- Unique design fits either left lateral and right medial, or vice versa, in only six SKUs compared to a traditional brace that needs as many as 56 SKUs to achieve the same range of patient fit.
- Additionally, a custom-fabricated brace option addresses challenging fit needs with an optimal height setting, cuff sizing and strap lengths that provide maximum comfort and mitigate migration. Optional extension and flexion control meet each patient's specific needs.

"This brace is a leap forward in innovation to drive patient comfort and com-

pliance. We use BOA's patented technology to achieve DonJoy ROAM OA's 'Set and Forget' which allows a provider or patient to set the unloading level just once," Pamela Hall, VP of Marketing, Enovis Bracing and Supports, told *OTW.*

"That setting will remain in place until it is actively reset, no matter how many times the user removes and reapplies the brace. Moreover, ROAM OA uses advanced technologies to assist patients who may have limited dexterity or worsening eyesight to achieve an easy application and comfortable fit. Finally, anti-migration, a signature feature of many of our braces, also supports ease of use and comfort ensuring the right fit, the first time. We dedicate our innovation resources to driving better outcomes for our patients." — *EH*

EXTREMITIES

World's First 3D Printed Toe Joint Replacement!

Coming soon to a foot near you… the world's first-ever 3D printed toe joint replacement!

Cincinnati, Ohio-based AddUp, Inc., a global metal additive manufacturing company, has teamed up with Washington, D.C.-based Anatomic Implants to submit a 510(k) for the world's first 3D printed toe joint replacement.

Anatomic Implants announced that this would be the first time that a medical device startup company had patented and developed a 1st metatarsophalan-

The Anatomic Great Toe Joint / Source: Anatomic Implants

geal joint replacement implant that was fabricated using titanium 3D printing technology.

According to Anatomic Implants, the market for toe joint replacements is underserved and that, of the currently available implants on the market "… none are anatomic or have the potential to support bone-in growth as well as the Anatomic Great Toe Joint. Only through the use of additive manufacturing can a porous structure be integrated into the design to promote osseointegration."

AddUp's FormUp 350 Powder Bed Fusion machine will be used to qualify the implant for submission to the FDA. According to AddUp, the FormUp 350 stands out in its ability to produce varying complex geometries with fine detailed lattice structures, ideal for implantable medical devices.

A Family Effort

David Nutter, CEO of Anatomic Implants, founded the company along with his father, Scott Nutter, D.P.M.

David Nutter told *OTW*, "With 1st metatarsophalangeal joint replacement being a largely underserved market, and medical device companies building lattice structures into implantables since the mid 2000s, Dr. Nutter and I sought out to make a more anatomic design by leveraging the latest technologies adopted by the industry & FDA."

We were excited to partner with AddUp to achieve 510(k) clearance after learning about their proprietary 3D printing technology and seeing how it could benefit the development of the Anatomic Great Toe Joint. We look forward to leveraging the AddUp team and their expertise to validate the world's first 3D printed toe joint replacement on their FormUp 350."

"AddUp is committed to supporting the development of cutting-edge solutions for the medical market" says AddUp Inc. Deputy CEO Nick Estock. "Our team at the AddUp Solution Center has the expertise on FDA regulations and qualification protocols to provide a proactive approach to regulatory compliance essential for a successful 510(k) submission. We are excited to be supporting Anatomic Implants through this process to bring the first additively manufactured toe joint replacement to market."

"The 1st metatarsophalangeal arthroplasty market is smaller than much larger markets, such as hips and knee joint replacements," said Nutter. "Companies have always targeted larger markets first, but the 1st metatarsophalangeal market is an underserved market, with many patients needing a better alternative."

"The most notable fact about the development process is that the implant was modeled by studying actual human bones and manipulating their geometry to yield the desired shape of the implant, as well as the fact that this shape could only be achieved through 3D printing technology."

The 510(k) clearance is anticipated in late Q3, 2024, and Anatomic Implants has secured design patents in the U.S., Canada, and throughout Europe. — *EH*

PEOPLE

Douglas C. Burton, M.D. Receives SRS Lifetime Achievement Award

Douglas C. Burton, M.D., the past Peltier/Reckling Professor and Chair and current Marc and Elinor Asher Spine Professor in the Department of Orthopedic Surgery at the University of Kansas Health System, has been recognized with the Scoliosis Research Society (SRS) 2023 Lifetime Achievement Award. This award honors a member for distinguished service to the SRS, as well as significant contributions to spinal deformity care.

Douglas C. Burton, M.D.
Courtesy of Douglas C. Burton, M.D.

Dr. Burton earned his undergraduate degree from Kansas State University in Manhattan, Kansas, and his MD from the University of Texas Southwestern in Dallas, Texas. He completed his orthopedic residency at the University of Kansas Medical Center and completed spine fellowships at The Texas Back Institute in Plano, Texas, and at Thomas Jefferson University in Philadelphia, Pennsylvania. He joined the KU School of Medicine faculty in 2000.

Active in the SRS since 2004, Dr. Burton is the current Research Council Chair and a member of the Executive Committee. At the SRS Annual Meeting and the International Meeting on Advanced Spine Techniques, he has been honored with the Hibbs, Goldstein, Moe, and Whitecloud Awards.

Dr. Burton's research interests include the development of disease specific health related quality of life instruments and the study of complications and outcomes associated with spinal deformity surgery. He has authored or co-authored over 300 peer reviewed publications and serves as a Deputy Editor of *Spine Deformity,* the official journal of the Scoliosis Research Society.

"Having this award bear my name is so meaningful to me," stated Dr. Burton to *OTW*. "Adult spinal deformity has been the focus of my academic career for 25 years; to be honored by my peers in the Journal I have been active in since its inception is incredibly humbling."

"I think that flexible fixation is an exciting technique that we need to study more. While there have been a number of studies in adolescents, more are needed. It is a priority of the SRS, certainly." — *EH*

REMEMBRANCES

Professor and Orthopedic Surgeon, Andy Wissinger MD Dies Age 92

Former University of Pittsburgh Medical School professor, chief of orthopedic surgery at Saint Francis General Hospital and Saint Margaret Memorial Hospital in Pittsburgh, H. Andrew Wissinger, M.D. has passed away at age 92 years.

Dr. Wissinger is remembered as a dedicated orthopedic surgeon, leader, mentor and…tree farmer and vintner.

Wissinger spent 35 years in private practice of orthopedic surgery and became a clinical professor of orthopedic surgery at the University of Pittsburgh Medical Center.

He earned his medical degree from the University of Pittsburgh School of Medicine and then completed an internship and general residency at Western Pennsylvania Hospital in Pittsburgh.

Dr. Wissinger's orthopedic residency was also at the University of Pittsburgh Medical Center. Dr. Wissinger's hand residency, by contract, was with Dr. Joseph Boyes in Los Angeles.

Wissinger was born in Pittsburgh to the late Zonar and Marie Wissinger on September 14, 1930. He went to Peabody High School and the University of Pittsburgh for both his undergraduate degree and his medical training.

After retiring from medicine, Wissinger started a second career as a tree farmer in Armstrong County where he also made wine and loved to spend time with family, friends, and his dogs.

He is survived by his wife Patricia Bik Wissinger and his sons David and Eric and their families. He also leaves behind four grandchildren, Erica L., John D., Gordon A., and Andrew F, a sister, Ann A. Atkinson, and nieces and nephews.— *TR*

Edwards Park "Ned" Schwentker MD Dies Age 82

Pennsylvania orthopedic surgeon Edwards Park "Ned" Schwentker, M.D., former Director of rehabilitation and pediatric orthopedic surgeon at the Elizabethtown Hospital for Children and the Hershey Medical Center, has died at age 82 in Palmyra, New York.

Dr. Schwentker is remembered by family, friends, colleagues and patients for his compassionate nature and his unquenchable thirst for knowledge.

He had such a passion for learning and helping others that he continued to start new chapters in his career instead of "officially" retiring. He didn't stop until the pandemic forced him to in 2020.

Dr. Schwentker earned his medical degree from Johns Hopkins University and completed his residency in orthopedics at the University of Pittsburgh.

Schwentker also completed a pediatric orthopedic fellowship at the Hospital for Sick Children in Toronto, Canada, and worked at the Alfred I. duPont Institute in Wilmington, Delaware.

In 1976 he began his tenure at the Hershey Medical Center and at the Elizabethtown Hospital for Children and Youth where he served as medical director.

During his tenure, he invented multiple devices in the hospital brace lab. He served at Hershey as a pediatric orthopedist and director of rehabilitation until he "retired" the first time.

Over the years Dr. Schwentker participated in medical missions to Armenia and Honduras and those experiences inspired him to open a pediatric orthopedic hospital in Honduras with his wife.

They moved there and ran it until Bunny became seriously ill and died.

When he returned to the U.S., he worked with medical students at Penn State College of Medicine on problem-based learning.

Schwentker was born in Sterling, New York, on February 5, 1941, but spent his formative years in Baltimore. He graduated from Gilman School and Haverford College before going onto to pursue medicine.

He married his wife Nancy "Bunny" Ravitch in 1964 and they raised three children together.

Schwentker was predeceased by his parents, Francis, and Madalyn (Crockett), his brother Frederic, and his wife Bunny

He leaves behind his sister Ann Phillips of Towson, Maryland and his children Ann, Pam and Mark, his partner Penny MacDougal, and eight grandchildren and one great-granddaughter. — *TR*

Hip Arthroplasty Pioneer, Frank Ariosta MD, Dies at 85 Years

Frank Anthony Ariosta, M.D., a pioneer in hip replacement at Staten Island University Hospital, has passed away at the age of 85.

Dr. Ariosta began treating patients at Staten Island Hospital of Stapleton in 1968, and in the early 1970s he performed the first ever hip arthroplasty on Staten Island.

He also was the chief of orthopedics at Staten Island University Hospital and was led the Center for Joint Reconstruction until he retired.

Ariosta shared a private practice with Dr. Stephen Pollack and Dr. David Drucker. He earned his medical degree from New York Medical College in 1967 before serving in the U.S. Navy Reserve until 1971.

Dr. Ariosta was an orthopedic surgical resident at Interfaith Medical Center from 1969 to 1972. Prior to that he was a surgical intern and resident at the Zucker School of Medicine at Hofstra/Northwell at Staten Island University Hospital.

Ariosta was born July 7, 1938, to Lea and Anthony Ariosta of Dongan Hills in Staten Island, New York. His parents loved to travel so he visited many places in Europe at a young age.

He attended Notre Dame Academy, Staten Island Academy, and Delbarton High School which he graduated from in 1956. He then received his undergraduate science degree from Wagner College in 1962.

When not at the hospital Ariosta loved to spend time in the Catskill Mountains hunting, boating, and working on the farm. He also enjoyed cultivating orchards.

Ariosta was married twice, first in 1962 to his college sweetheart Ann Marie Costantino and then in 2001 to his best friend Peggy Thony.

He and Ann Marie had two daughters together and loved to travel together. He and Peggy built Skytop Farms in Freemont Center in New York where they bred racehorses. He raised Peggy's children Sarah and Andy as his own.

Ariosta is survived by his wife, Peggy, daughters Leanne Lucarelli, Cynthia Ariosta and Sarah Fox, and stepson Andy. He also leaves behind his grandsons Gregory Lucarelli, Alex Lucarelli, Henry Fox, his first wife Ann Ariosta, his sister-in-law Bernadette Puleo, his niece Larissa Carroll and nephews Tommy Costantino and Vinny Costantino.. — *TR*

Founder of Abilene Bone and Joint Dies Age 82

J. Graham Bray Jr., an orthopedic surgeon who founded the Abilene Bone and Joint Clinic and is remembered as a true Renaissance Man, has passed away at age 82.

Dr. Bray earned his medical degree from The University of Texas Medical Branch at Galveston. Following graduation, Dr. Bray served in the United States Air Force. He entered orthopedic residency at the University of Oklahoma in Oklahoma City and then in 1969 he moved to Abilene, Texas, to join his uncle, Dr. Willis Joe Bray, in private practice.

Dr. Bray would later start the Abilene Bone and Joint Clinic and served for many years as a volunteer team physician for local high school and college football teams.

In 1990, he and his family left Abilene and moved to California where he continued his clinical practice until he retired in 2108. Besides his devotion to medicine, Bray was also a nature lover, music lover, sailor, traveler, and a poet. Later in life, he learned tot play piano and enjoyed wood carving and practicing bonsai gardening.

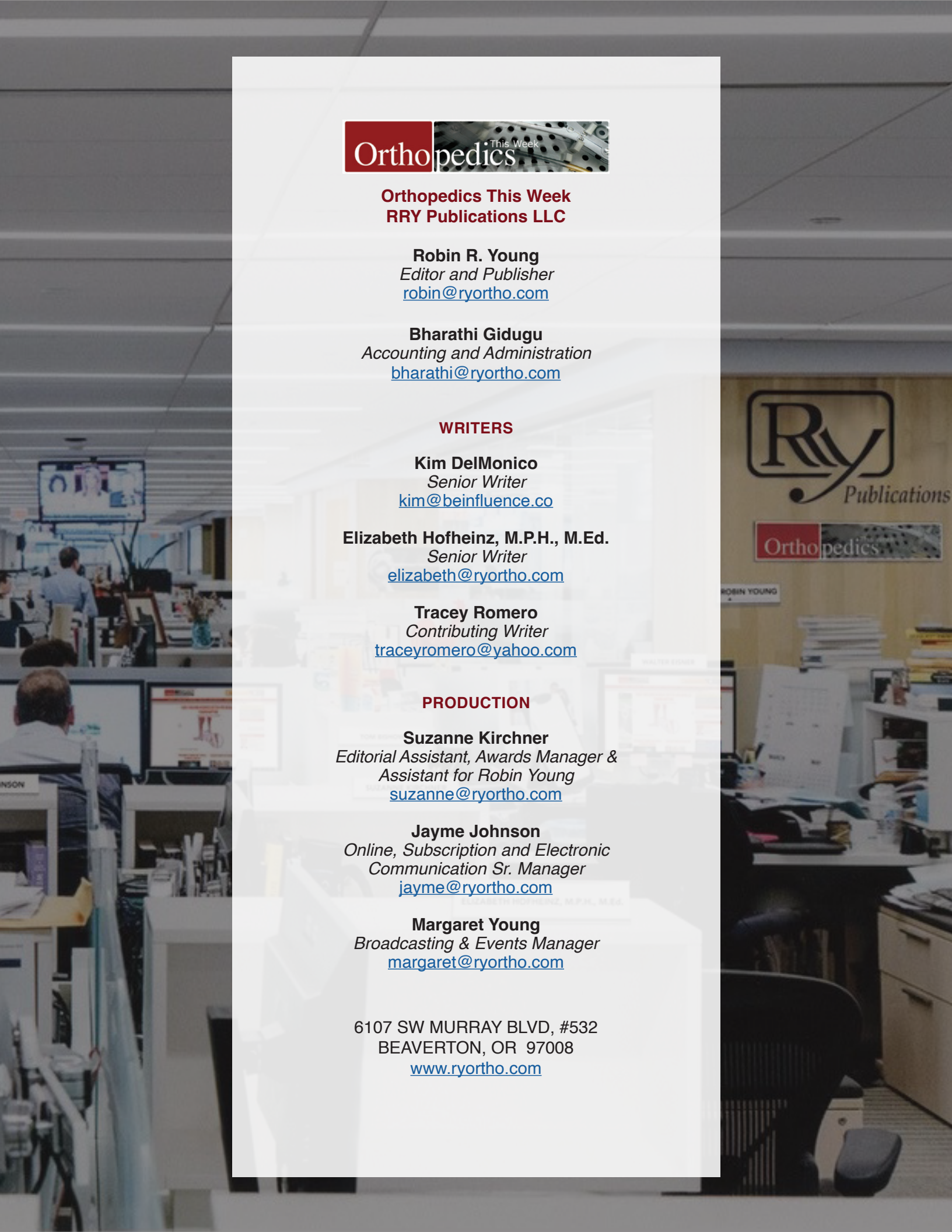
Bray was born on March 7, 1938, in Kirksville, Missouri. He graduated from Arlington Heights High School in Fort Worth, Texas. He met his wife-to-be in high school. He went on to graduate from Baylor University before pursuing medicine.

His family said, "Graham was known for compassionately listening to his patients, being highly regarded by his colleagues."

He leaves behind his wife Dr. Carolyn H. Bray, and his children Caron Bray Jacobs, Kimberly Bray Pruitt and David Bray as well as his stepchildren, Melinda Herring Roberson, and Tim Herring.

He will also be missed his grandchildren Caroline, Bec, Wes, Lillian, Emma, Ivey, Dalton, Rayce, and Amanda and his eight great grandchildren and his miniature poodles Lou and Pepper.

He was predeceased by his parents Dr. John Graham Bray and Rosemary Bray Clapp. — *TR*



Orthopedics This Week
RRY Publications LLC

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

Bharathi Gidugu
Accounting and Administration
bharathi@ryortho.com

WRITERS

Kim DelMonico
Senior Writer
kim@beinfluence.co

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

Tracey Romero
Contributing Writer
traceyromero@yahoo.com

PRODUCTION

Suzanne Kirchner
Editorial Assistant, Awards Manager & Assistant for Robin Young
suzanne@ryortho.com

Jayme Johnson
Online, Subscription and Electronic Communication Sr. Manager
jayme@ryortho.com

Margaret Young
Broadcasting & Events Manager
margaret@ryortho.com

6107 SW MURRAY BLVD, #532
BEAVERTON, OR 97008
www.ryortho.com