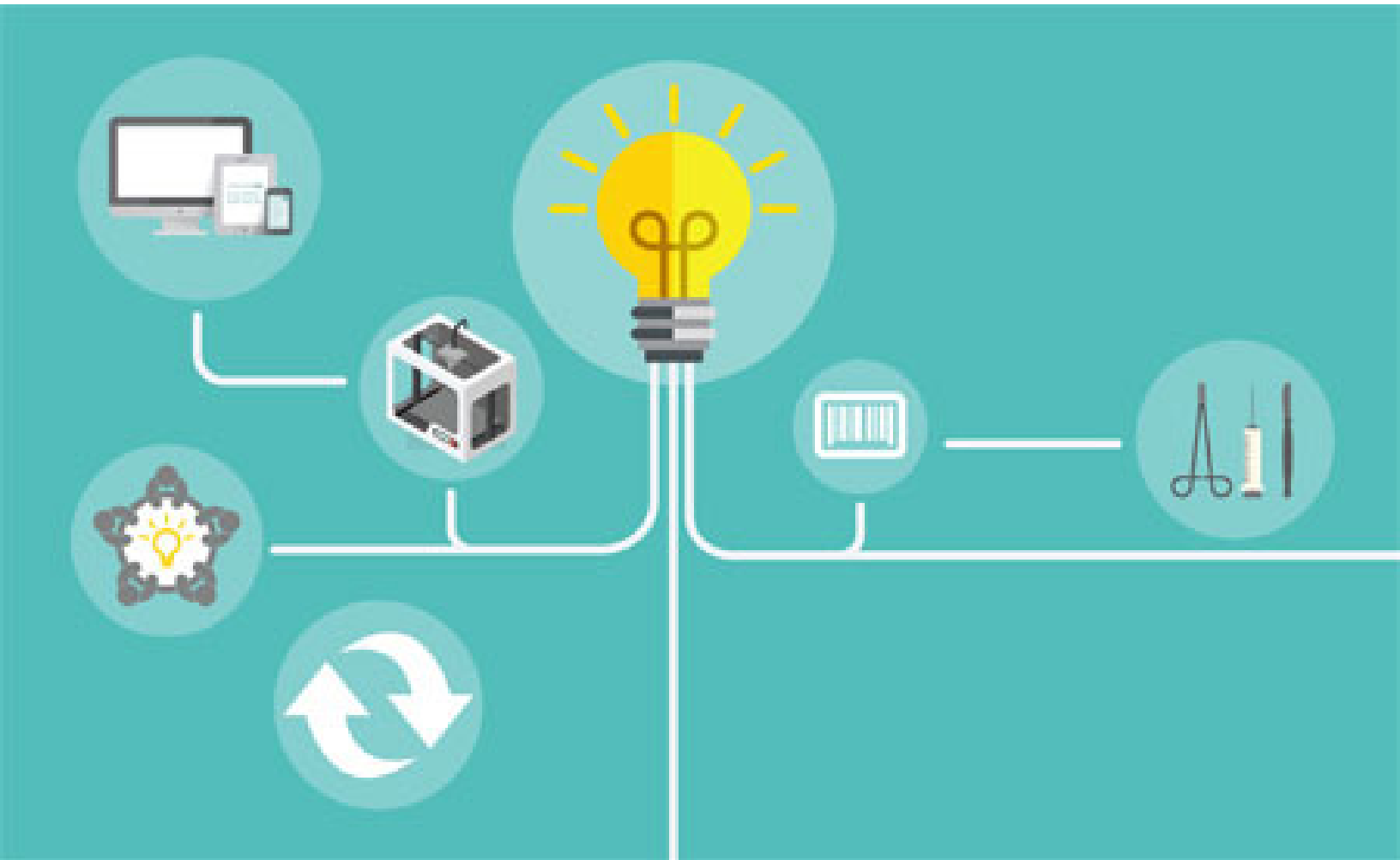


January 2016

O&P News

THE O&P COMMUNITY'S NEWS SOURCE



The Next Big Thing
Innovations Are Changing the Field of O&P.

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In the day-to-day business of running an O&P practice, staying on top the latest innovations can be challenging. From 3-D printing to web design to surgical techniques, new products and processes are constantly changing and adapting, while many O&P businesses struggle to meet patient needs in the current regulatory environment. But for some, investigating the latest technologies both large and small could provide the spark that leads to a way to set oneself apart from the competition, to help new and different patients, or even to renew one's love for the field.

Up-and-coming prosthetic technology



Patrick Prigge, CP, FAAOP
clinical manager
Advanced Arm Dynamics

When asked about the most exciting innovations in O&P, many practitioners focused on prosthetic advancements, such as microprocessors, 3-D printed hands and flexible sockets. The Cleveland Clinic designated “Naturally Controlled Artificial Limbs” as number 7 on its list of predictions for the “Top Medical Innovations of 2016.” The clinic cited the Defense Advanced Research Projects Agency (DARPA)’s research on brain-machine interfaces, as the area to watch for the newest breakthroughs, noting the DARPA project could lead to more affordable prostheses for the general public. Meanwhile, a group of engineers, physicians and clinicians are working together to explore new avenues for peripheral nervous system machine interfaces, or PMIs (see Combined expertise leads to new avenues for PMI technology here).

Patrick Prigge, CP, FAAOP, clinical manager for Advanced Arm Dynamics in Minneapolis, has a number of reasons to be excited about prosthetic development.

“There are so many areas of interest that are new areas that will impact clinical care in the future. The work being done to restore the sense of touch through nerve stimulation is fascinating,” he said.

Prigge hopes to see developments in the creation of a closed loop system that provides sensory feedback to the user as an alternative to body-powered systems. Another area of interest for Prigge is limb reconstruction techniques.

“As prosthetists, we can only do our best with the best limb presentation,” he said. “Many surgeons see the value now of proper amputation and things like targeted muscle and sensory reinnervation, limb lengthening through various techniques, toe-to-hand transfers, cadaver allografting, angular osteotomies [and] soft tissue revision that may include pedicle or free flap transfers. [These techniques] all are being considered necessary to optimize a patient’s potential.”

Prigge pays particular attention to developments in upper limb prosthetic technology, which is his focus in the clinic.

“The vast majority of upper limb amputations, by a factor of 10, are distal to the wrist,” he noted. “This is an area often overlooked as there have not been significant advances in componentry or socket-fitting techniques for this level of patient. The challenge with this population is that every amputation presents a new amputation level and has to be handled with creativity.”

Prigge and colleagues at Advanced Arm Dynamics are working on the development of techniques to treat patients with partial hand amputation by using different styles of mechanical joints.

“There are other companies that are also contributing to this area,” Prigge said. “Of note are companies like Partial Hand Solutions with the M-Fingers, Naked Prosthetics with their [proximal interphalangeal] PIP- and [metacarpophalangeal] MCP-driven mechanisms, and also Touch Bionics’ newest i-digits quantum are exciting.”

After acknowledging all these are areas of development, Prigge still singled out 3-D printing as the most relevant innovation to watch in 2016.

“The combination of solid clinical expertise combined with the creative power of the 3-D printer will become more mainstream,” he predicted, adding, “We have challenges in fitting all the time that require innovation and creation of components or accessories for a prosthesis that typical machining cannot handle. Proof of concept devices that can be rapidly printed and demonstrated during an expedited fitting with short turn-around times will become standard.”

Orthotic technologies and materials

Prosthetics is not the only area with new developments under way. According to Brad Mattear, LO, CPA, central United States and national strategic account manager for Cascade Orthopedic Supply Inc. in Chico, Calif., the “O” in O&P also has plenty of innovation to look forward to in the coming year.

“Sometimes we get saturated looking at the emerging technologies in prosthetics. The ‘wow’ factor in prosthetics is certainly there. [What] sometimes gets kind of a third look down the road is orthotics, along with materials,” Mattear told O&P News. “The advancements in materials that are being brought to the marketplace from places like Europe and Asia take a long time to get over to the U.S. market. Then just because they get here, and are as good as those materials are, sometimes our payer systems are not the best, so they reduce the capabilities of the practitioners to provide those advancements.”

Mattear had one product in mind when asked about exciting technologies from 2015.

“If you talk specifically about orthotics, the Triple Action ankle joint from Becker [Orthopedic] is a game changer,” he said. “Certainly for the orthotist [who] looks at the patient beyond a standard articulated ankle joint and they want to get more biomechanically involved with the patient, the Triple Action ankle joint meets those needs. [The] new school orthotists [who] are being educated are taking this type of new technology and they want to run with it.”

As the director of research and development for Becker Orthopedic, Nicholas LeCursi, CO, helped develop the Triple Action ankle joint. LeCursi takes products from the concept stage to the manufacturing stage and said the company typically has between four and eight projects ongoing at any given time.

LeCursi said products that can be used in more than one health care field are an area of interest for future projects.

“I am intrigued by some of the work in the rehabilitation community that employs orthotic technologies more effectively for rehabilitation,” LeCursi said. An example of this is the Hip Flexion Assist Device, which LeCursi said is more commonly used by physical and occupational therapists than by O&P practitioners. LeCursi said he expects to see orthotic technologies for rehabilitation continue to evolve in the coming years.

In terms of materials, Mattear highlighted ProComp, or carbon fiber infused polypropylene, which he said “meets and exceeds some desperately needed thermoplastic requirements in the marketplace.”

“To have the ability to have a thermoplastic that is reinforced with carbon fiber that adds strength to an orthosis without adding weight to an orthosis is what a lot of practitioners were looking for,” he said. “That allows the practitioner or technician to stay down in thickness [without] increasing weight for the patient, which is tremendously important.”

In addition to 3-D printing, Mattear said he expects to see continued development of CAD/CAM manufacturing in the coming year.

“CAD/CAM has been around in our industry for over 20 years. [It] is not new by any means, but we are slow in terms of grabbing that technology and running with it,” he said. “What I have been privy to are some fantastic advancements on CAD/CAM [mainly] coming from one of two companies in the United States, but the majority coming from the Euro[pean] and Asian sector. Those guys in the Euro/Asian sector are [refining] the technology and making it more [applicable] to orthotics and prosthetics.”

In terms of technologies that are being replaced, Mattear said those in the orthotics industry have talked for years about metal and leather being phased out. At the same time, he said, O&P is a field that is slow to change.

“People who have metal and leather devices do not want to change. There are still plenty of physicians who order metal and leather devices,” he said. “The problem is that payment for those devices, the reimbursement [is] horrible. The business is kind of stuck. You get a prescription for a short leg brace, and it costs you as much to make it as you do to get reimbursed from insurance for it.”

Fortunately, Mattear said more manufacturers are looking at reimbursement trends as they create new technologies. This shift in focus could lead to technologies that can be more widely used.

“I see more and more manufacturers looking at patient populations and then correlating that patient population to an L code, to a reimbursement that a manufacturer [sees in the marketplace]. I see more manufacturers, especially in the off-the-shelf market, identifying great reimbursement opportunities, but also refining older appliances that are out there and making them more patient-friendly and available to the orthotist and prosthetist.”

Strides in communication, business and marketing

According to Prigge, the use of technology in the office is essential for any prosthetist who wants to collaborate with other health care professionals and deliver the best outcome for each patient.

“In a medical field that is highly specialized, we tend to keep to ourselves,” he said. “Physicians do their work, give referrals, and prosthetists do their work and therapists do their work. Rarely do all these come together to impact that patient by collaboration.”

Because he focuses on upper limb and partial hand amputations, Prigge often works with physicians to discuss surgical options before an amputation takes place.

“Technology is something that factors into each and every fitting that we do,” Prigge told O&P News. “Technology factors into working with physicians in order to prepare an individual for a proper amputation or revision so that we can do our best for them. Frequently we use technology like Skype or FaceTime with physicians as they meet their patient in surgical prep to discuss details of their approach.”

Prigge said this team approach to patient care opens up new avenues of treatment for everyone involved. “Together we can brainstorm across disciplines and create opportunities that would not be there [if we were] working alone.”

In terms of business technology, Mattear said he expects to see a bar coding system offered and implemented beginning in 2016.

“Companies are screaming for the ability to grab a product out of the stockroom, off the shelves, whether it is the production of a prosthesis or an orthosis, [and] be able to take that product and put it into a [work in progress] WIP form and automatically have that re-ordered. That type of technology is necessary as we go forward in this tumultuous time of orthotics and prosthetics. Our industry is [in need of] bar coding to be implemented, both on the clinical side and on the central fabrication side,” Mattear said, noting that a few companies are in the process of testing these types of programs. “Once that gets fine-tuned, developed and implemented into the O&P environment, that will certainly allow the business to operate more fluidly and at a higher functioning level to decrease loss and decrease overhead. When you decrease overhead, you are decreasing practitioner time or administrative time and you are saving money.”

Much like other O&P technology, Mattear said, this type of business-oriented technology will need to be offered at an affordable price for O&P facilities to make a difference in the field.

“What we have to be cognizant of is just because we make this new technology available, we also have to make it affordable. There is a cost-benefit analysis that needs to be done by that company to decide what the upfront cost is and then what the backside benefit would be,” he said.

Another area of O&P in desperate need of an upgrade is electronic health records (EHRs), according to Jason T. Kahle, MSMS, CPO, FAAOP, clinician and chief executive officer of OP Solutions Inc.

“We are undoubtedly in the dark ages,” Kahle said. “There are only three options for us in O&P in EHR selection, whereas there are hundreds of EHR solutions out there for other medical providers.”

Kahle said the EHR options that exist for O&P clinics are not technologically advanced in comparison with other EHR solutions; they are not cloud-based or user-friendly. This is because there is so little competition and because documentation requirements are much heavier for physicians due to the implementation of the Affordable Care Act (ACA), he said.

“What the ACA has done, and this is evidenced by the recent [local coverage determination] LCD proposal, is essentially eliminated us from the process of getting a prosthesis from the standpoint of what is absolutely required for justification,” Kahle said. “They are shifting the responsibility completely on the physician and taking us out of the picture.”

Kahle said one of his goals at OP Solutions — and what should be a goal for all O&P facility owners — is to create opportunities for O&P practitioners to insert themselves back into the health care equation.

“The average physician does not understand the paperwork that we need or the parameters that have to be met to get medical justification for a prosthesis or an orthosis,” he said. “The reason it is important for us to be up-to-date technology-wise and for us to have solutions for our patients, is because they are not going to get what they need if we do not have a way to solve or work around the issues the Affordable Care Act has created. [Through] technology, we can essentially guide them through that difficult process.”

Technology, such as the software platform offered through OP Solutions, allows the practitioner to engage the patient and help them make their own choices about their O&P care. This way, he said patients “can help their own cause when they go to the physician or they go to another health care provider, or their insurance, to fight for something that is medically necessary.”

Kahle said EHRs will continue to evolve for all aspects of health care that fall under the ACA, and O&P cannot afford to be left behind.

“The EHR landscape is changing dramatically,” he said, adding that the ACA “is essentially driving the technology to a position where EHRs have to be more interoperable. They have to work with each other.”

Currently, EHRs from health care providers in different states, or even for acute vs. chronic problems, do not “match” or communicate with one another. Kahle said this is a problem IT systems within health care are working to address in the near future. Interoperability would allow a physician to easily access a patient’s record no matter where the patient previously received care.

“It is exciting to see that the government is pushing us toward interoperability. The problem with [O&P] is [the] three options that are out there in EHRs in our industry do not interoperate because they are small EHR companies, comparatively speaking,” Kahle said. OP Solutions will offer an EHR solution for O&P companies in 2016, and Kahle said a few other companies may have similar offerings in the works.

Similarly, LeCursi said he believes 2016 will usher in the integration of health information systems.

“The evolution of the provision of health care is toward ever-increasing levels of specialization,” he said. “Greater specialization also requires greater communication between services, so information systems need to keep pace.”

Another way Kahle is using technology to help educate patients is through the Prosthetist Finder, a tool he and OP Solutions have created in collaboration with the Amputee Coalition. The application aggregates the data on all prosthetists practicing in the United States and allows patients to perform a search based on their preferences.

“It allows the patient access to the prosthetist [and] allows the patient to select the characteristics they are looking for,” Kahle said. “Maybe they are looking for someone close to their house, or maybe they are looking for someone who has full license capabilities or has a [specific] credential. Or maybe they are a member of the Amputee Coalition. So there are eight or nine different things you can select about the prosthetist so it can help you as a patient figure out which prosthetist you want to go to.”

For a fee, prosthetists can jazz up their profiles on the website and even add a photo, but they are included in the database for free.

Kahle said O&P practitioners should look for tools that allow them to offer a professional quality website for patients in order to compete. For example, OP Solutions offers a single instant multi-tenant website platform which O&P facilities can use to host a website with relevant O&P content, with minimal effort from the business owner. This type of platform also ensures a company’s website is mobile-friendly and updated regularly with new content.

“O&P companies are starting to get with the program when it comes to applications on mobile devices and [they are] a bit more technologically savvy as far as choices for fitting [O&P devices] goes. But, you are still seeing that huge void of getting information to your patients in a better way like [OP Solutions] does,” he said. “I still think our industry has a long way to go with introducing cutting-edge technology. There is so much great technology out there that we are under-utilizing.”

Looking to the experts

Kahle advised O&P facility owners to watch major manufacturers and O&P companies to keep track of the direction new technologies are moving.

“You have to be able to use what is available to you, and I think that is part of the problem with O&P. We are subject to whatever the large manufacturers are doing. We are limited by what they do or do not do,” he said. “So I think the best thing to do to keep your finger on the pulse is to watch the big companies for what they do introduce and see how that technology can help you.”

He also said the Healthcare Information and Management Systems Society Conference and Exhibition, which will be held Feb. 29 to March 4 in Las Vegas, also will offer ideas and solutions that cannot be found at O&P conferences.

“It is dedicated only to information technology related to health care,” he said.

Prigge pointed to the first International Symposium on Innovations in Amputation Surgery and Prosthetic Technologies, set for May 12-13 in Chicago, as an event to follow for the latest information on O&P innovations.

“This is something needed to bring together the field and start the conversation officially in the area of limb reconstruction and advancements,” he said. “I predict this will set the stage for more interest and ideas being developed for individuals with limb loss, especially the upper limb loss individual.” – by Amanda Alexander

Reference:

Top 10 medical innovations for 2016. Cleveland Clinic. Available at: <http://innovations.clevelandclinic.org/Summit-%281%29/Top-10-Innovations.aspx>. Accessed: Dec. 3, 2015.

Disclosures:

Prigge reports no relevant financial disclosures. Kahle reports he is owner of OP Solutions. LeCursi reports he is employed by Becker Orthopedic. Mattear reports he is employed by Cascade Orthopedic Supply, a supplier of Becker Orthopedic products including the Triple Action ankle joint.