By **CHRISTINE UMBRELL**

What To Expect

When Your Patient's Expecting

Flexibility to work with both physical and emotional adjustments is a must

NEED TO KNOW:

- Expectant mothers undergo physical changes during pregnancy—such as weight gain, fluid retention, and difficulty bending—that can significantly impact their orthotic or prosthetic needs.
- Prosthetists should be aware of the weight ratings associated with their patients' devices and fit new componentry if necessary. They also may need to devise creative solutions to accommodate weight gain, such as switching out liners of different thicknesses or casting with extra socks.
- Orthotists may need to fit pregnant patients with devices that are adjustable. Some patients may benefit from support belts, compression hose, or foot orthoses during this time period.
- Clinicians with experience in this patient population suggest scheduling more frequent appointments during pregnancies. They also emphasize the importance of listening to patients' concerns, providing reassurance, and focusing on positive clinical solutions for patients who express doubts about accomplishing specific parenting tasks.
- Both male and female practitioners who are inexperienced with pregnant patients can turn to mentors for advice when treating this population.
- Expectant O&P clinicians may require accommodations during their own pregnancies, and should evaluate their workplaces to determine whether to reduce their fabricating duties, take more breaks during the workday, and prepare co-workers to care for their patients while they are out on maternity leave.

LAST MONTH, U.S. SEN. TAMMY DUCKWORTH (D-ILLINOIS) brought pregnancy as an O&P patient into the national spotlight, becoming the first U.S. senator to give birth while serving in Congress. Duckworth, a bilateral lower-limb amputee who also has a 3-year-old daughter, has successfully navigated two pregnancies as an individual with limb loss.

Though pregnant women may not comprise a large percentage of the O&P patient base, it's important that expectant mothers' clinical needs are met. Pregnant patients may experience physical symptoms such as weight gain, fluid retention, tenderness, and difficulty bending. These symptoms should never be taken lightly—especially among women who have limb loss or limb difference.

Shalyn Latorre, CPO, LPO

"Pregnant O&P users are a fairly small patient population, who have specific needs that are important to address," says Shalyn Latorre, CPO, LPO, clinic manager at Hanger Clinic in Sarasota, Florida. Women who become pregnant "can experience skin changes, ligament changes, perspiration changes, and volume and edema changes," says Latorre. Devices may have to be adjusted or even replaced, depending on each individual's clinical needs and how her pregnancy progresses.

Changing body issues can affect both prosthetic and orthotic patients, so it's important for all O&P clinicians to be aware of each patient's pregnancy, schedule extra appointments when warranted, make appropriate changes to the treatment plan, and be prepared to educate patients about changes that may occur during pregnancy as well as preparations for delivery and motherhood.

Growing Bodies, Shifting Prosthetic Needs

The most obvious change in a pregnant patient's body is the weight gain that is an inherent part of the process. Individuals of "normal weight" before pregnancy should expect to gain between 25 and 35 pounds over the course of nine months, according to the Centers for Disease Control and Prevention (CDC). "With weight gain comes a shift in the center of mass, so you have to see the patient more often to check alignment," says Latorre.

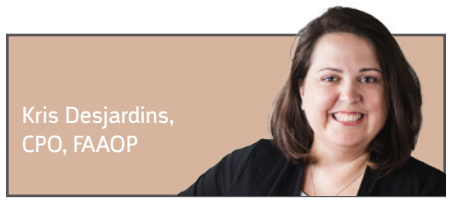
With the shift in center of mass, which typically results in leaning forward, come shifts in a patient's sense of balance and a need for changes in alignment, says Kris Desjardins, CPO, FAAOP, of Ability Prosthetics & Orthotics' Exton, Pennsylvania, patient-care center. "There's increased lordosis" affecting the small of the back.

"For some of my amputees, I have suggested a maternity [support] belt," says Nancy Snyder, CPO, LPO, an area clinic manager at Hanger Clinic in Gainesville, Georgia. "Pregnancy puts a lot of stress on the body."

Some patients may require adjustments or new componentry to accommodate weight gain. "Many of our components are weight-rated, so we have to be careful" not to allow patients to remain in a device that doesn't match their new weight, says Latorre.

For patients who experience rapid volume fluctuations as a result of pregnancy, "you might need to get creative," says Snyder. For example, a patient may start out a pregnancy using a 9-millimeter gel liner, then transition to a 6-millimeter liner, and switch again to a 3-millimeter liner, suggests Snyder.

Similarly, Desjardins has used a thicker, flexible inner liner, "knowing we could remove it," when working with an above-knee patient. "When we made a socket, we casted her with extra socks," which could be removed as the pregnancy progressed.



Kris Desjardins, CPO, FAAOP

Patients with microprocessor-controlled devices also may require special attention. "In addition to overall alignment changes, transfemoral patients may require adjustments to their knees during their pregnancy and after," says Latorre. "You can make fine-tune adjustments to microprocessor knees to accommodate for your patients' bodies changing. You can easily save the old settings and return the knee back to those settings when it is appropriate for your patient."

In addition, a growing mid-section can lead to problems with donning and doffing. Clinicians can try to ease this process with inventive solutions: Latorre recalls providing a rotator underneath a socket to help one patient get her shoe on. But patients themselves sometimes have their own interesting ideas: "One of my transtibial patients came up with a creative solution to use kitchen tongs to put her liner on," says Latorre.

Other patients may require back support, compression hose, or foot orthoses during pregnancy. "Sometimes patients' feet change," says Nicole Keller, CPO, of Bionics O&P in San Diego. Other women may experience skin issues if they are in a restrictive device.

Overall, a lot of options exist for making needed adjustments without getting all-new componentry. When clinicians face a particularly challenging pregnant patient, they can turn to other practitioners who have more experience in this arena for guidance—or consult with manufacturers. "A lot of companies that fabricate have seen these issues before," says Desjardins.

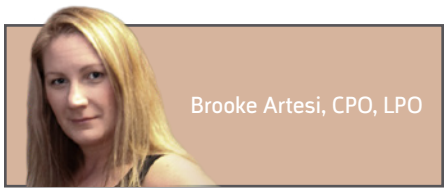
Brooke Artesi, CPO, LPO, has treated pregnant O&P patients and also has experienced pregnancy as a lower-limb amputee.

Addressing Orthotic Needs, Safety

While the clinical needs of pregnant orthotic patients may appear less drastic than those of prosthetic patients, it's important to accommodate the changes experienced by brace-wearing patients as well.

Weight fluctuations and swelling in ankles and feet can cause discomfort, so using adjustable devices is key to helping these patients adapt as their bodies change. Latorre suggests using an adjustable BOA system in ankle-foot orthosis (AFO) and knee-ankle-foot orthosis (KAFO) closures. Snyder notes that orthotic devices made of plastic may be preferable, as adjustments are easier to make.

"I try to make AFOs as adjustable as possible," to allow for potential swelling and weight gain, adds Desjardins. "Having an AFO that can open up can be really important," especially because insurance may not cover new devices, she says. She also suggests using Tamarack joints, which allow for a little more "play," compared to other types of joints.



As with prosthetic patients, creativity can go a long way when designing treatment plans for orthotic patients. Desjardins treated one pregnant woman who required a bivalve thoracic lumbosacral orthosis (TLSO) as the result of a car accident. While the fetus was unharmed in the collision, the mother was prescribed the TLSO for the duration of her pregnancy. "It was soft in the belly but harder in the frame, and we put several layers of foam in the belly section when making it, so the patient could peel off layers as she grew."

It's also important to consider whether any devices have restrictions regarding use by expectant mothers. Brooke Artesi, CPO, LPO, owner of Sunshine Prosthetics and Orthotics in Wayne, New Jersey, notes that devices with functional electronic stimulation (FES) technology should be temporarily discontinued during pregnancy. One of her multiple sclerosis patients was in an FES-driven WalkAide for foot drop prior to getting pregnant. Artesi switched the patient to a KAFO while pregnant because "the safety of FES for use during pregnancy has not been established," according to manufacturer Innovative Neurotronics. While the KAFO was a challenge for the patient after being accustomed to the WalkAide, she complied with Artesi's wear instructions and was able to switch back to her preferred device as soon as her baby was delivered.

PHOTO: Julian Huarte Photography

Safety in the O&P Workplace

Clinicians Share Strategies for Ensuring Their Own Healthy Pregnancies

O&P facilities with in-house fabrication areas can be a challenging environment for pregnant clinicians. While there are no explicit guidelines geared specifically toward pregnant O&P clinicians, safety begins with following all of the rules set forth by the Occupational Safety and Health Administration (OSHA) regarding chemical exposures, including wearing appropriate personal protective equipment, such as gloves and masks.

"There are many studies that talk about the dangers of being around the chemicals we use" in fabrication, says Nancy Snyder, CPO, LPO, an area clinic manager at Hanger Clinic in Gainesville, Georgia. She has two children and tried to avoid being around chemicals during her pregnancies. "As O&P clinicians, we become desensitized to some of these smells," she says. "You really have to be careful and wear gloves when using acetone, and be careful with cement and glue."

Nancy Snyder, CPO, LPO

Shalyn Latorre, CPO, LPO, emphasizes the importance of reading the Material Safety Data Sheets provided by manufacturers of lab materials. "Follow the guidelines," says Latorre, a clinic manager at Hanger Clinic in Sarasota, Florida.

"You need high-quality protective gear" when working with chemicals and laminations, says Kris Desjardins, CPO, FAAOP, of Ability Prosthetics & Orthotics' Exton, Pennsylvania, patient-care center. Desjardins worked in an O&P facility with in-house fabrication while pregnant with her children, who are now ages 2 and 4. She advocates wearing the personal protective equipment recommended by OSHA, as well as scheduling breaks throughout the day. "And don't be afraid to ask co-workers to assist," especially with removing casts and similar tasks.

Nicole Keller, CPO, at Bionics O&P in San Diego, avoided all carbon and some glues, plastics, sprays, and adhesives during her pregnancy a year-and-a-half ago. She also made sure to read every label. "I didn't sand with carbon, and I used a mask when I needed to," she says. Keller also relied on a facility technician to assist with modifications. "If you have a patient who needs a gait belt or is using a new device, ask for help," she says.

PHOTO: Julian Huarte Photography

Brooke Artesi, CPO, LPO

Brooke Artesi, CPO, LPO, who lost her leg below the knee in a traumatic accident more than 20 years ago, has gone through pregnancy twice and now has a 5-year-old and 16-month-old. When she was pregnant with her older son, she worked at a large facility with in-house fabrication, and cut back her fabrication duties to reduce exposure to chemicals while pregnant. During her second pregnancy, she had started her own company—Sunshine Prosthetics and Orthotics in Wayne, New Jersey—which outsources all fabrication and thus eliminated exposures.

Because she is constantly vigilant about safety, Marissa Paley, MPO, CPO, LPO, says she took the same precautions regarding fabrication materials, chemicals, and fumes before, during, and after pregnancy. And she did not have to alter her work day in regard to seeing patients. "I continued to perform all aspects of patient care, including casting, scanning, measurements, fabrication, adjustments, documentation, and everything in between, and continued to perform all patient care until I went out for my maternity leave," says Paley, who works at JRK/JRI Prosthetic and Orthotic Laboratory in Edison, New Jersey. She began her maternity leave one month prior to her due date.

For some clinicians—especially those who work all nine months of pregnancy—clinical care does become more challenging. As getting down on the floor and moving around becomes more of an effort, Snyder suggests using a casting stand. "You can sit upright and have a patient get on the stand, so you don't have to bend over," she explains. "By using the casting stand, it takes stress off your body."

Desjardins says that she spent a little less time on patient care during the last couple of months of her pregnancy, but picked up extra marketing duties, which proved to be less strenuous—and ultimately boosted business at her company.

Once a clinician's baby arrives, orthotists and prosthetists face varying maternity leave policies. Owning her own business meant a unique experience for Artesi: "I really didn't take one," she says. "I worked a shortened schedule and strategically scheduled patients in the middle of the day. But I brought my baby to the office," and also had her mother assist with child care.

Other clinicians take several weeks or months of leave. Desjardins encourages pregnant clinicians to take as much time as they are fiscally able for maternity leave, and she suggests preparing detailed notes to assist other staff members in providing optimal care during an absence. "Figure out which patients will be coming in while you're out and make notes so other clinicians" are properly prepared, says Desjardins. Such an approach helps assure a continuity of care for patients.

O&P professionals occasionally gain new patients when mothers experience complications during delivery, so clinicians should be prepared to act quickly should such a circumstance occur. "I've had hospital calls when a mother experienced a nerve injury while giving birth and had drop foot. I had to rush to provide an AFO" for these patients, says Desjardins.

One additional consideration for orthoses—and prostheses as well—is to "make it easy to get devices on or off quickly" for more frequent trips to the bathroom, especially during the final months of pregnancy, says Desjardins.

Frequent Appointments, Candid Conversations

Clinicians who have treated pregnant patients say extra attention is key to successful patient outcomes—by seeing patients more often and by more closely monitoring their physical and emotional changes. "Whether it be addressing a pregnant patient with prosthetic intervention, orthotic intervention, or dual interventions, it is important to understand that a patient may require more frequent trips to see you because one day can be different from the next, and a morning can be extremely different than the afternoon," says Marissa Paley, MPO, CPO, LPO, of the JRK/JRI Prosthetic and Orthotic Laboratory in Edison, New Jersey.

"It is important to be ahead of the game with design considerations for management during pregnancy but also during the postpartum timeframe as well," says Paley. "These design considerations are not just for size/volume changes but also considering changes in range of motion in relation to the changing center of gravity the patient may experience."

Desjardins and Latorre try to schedule expectant mothers on a monthly basis, to make adjustments before problems arise. "But pregnant patients have a lot of appointments already," with obstetricians and other specialists—for complicated pregnancies—says Desjardins. "So, I try to schedule appointments well in advance," and make it easy to accommodate patients' work schedules and other physician visits. Snyder also recommends scheduling appointments ahead of time, but, for patients with lower-extremity orthoses, she suggests seeing them every four to six weeks.

Marissa Paley, MPO, CPO, LPO

Extra appointments can be both physically and emotionally healing for patients—especially new moms who are uncertain not only about impending motherhood but also about caring for a baby as an individual with limb loss or limb difference. O&P clinicians "can come close to understanding what they're going through and be a positive outlet" for listening to and alleviating their concerns, says Snyder. Some patients may share their fears about caring for a new baby, or their concerns about falling or dropping the baby. Some patients with arm loss also may worry about holding their babies in a safe manner, and congenital amputees may wonder whether their babies may be born with limb loss. Snyder suggests that clinicians take the time to listen to patients about their concerns, provide reassurance, and focus on positive clinical solutions if they express doubts about being able to accomplish a specific parenting task.

Snyder recalls one upper-extremity patient who was particularly concerned about holding her baby. "I made her a passive arm and padded the forearm, so she could hold the baby with the passive arm and feed the baby using the sound side," she says. The patient loved the device and was extremely appreciative of the extra attention to detail on Snyder's part.

Clinicians also should be prepared to discuss how patients can help control their changing O&P needs by addressing the topic of weight—a difficult, but important, talking point. Artesi—who has dealt with these issues herself, as she is both an amputee and a mom of two—advises pregnant patients to try to avoid gaining more weight than is recommended by the CDC, and to stay active during pregnancy. "That's what any doctor would say to any patient—to stay healthy—but it's even more important for patients with limb loss," she says. "You need to be mobile afterwards—you don't want to end up in a wheelchair."

Latorre also advises that, "if patients have concerns about how pregnancy could affect their mobility, clinicians take the time to have encouraging conversations with them about steps they can take to stay as active as possible—empower them with positive conversations."

Whether because of weight gain or other issues, some patients may not be able to use their prostheses toward the latter months of pregnancy. Desjardins, for example, worked with an above-knee patient who had to transition to a wheelchair as delivery approached. Honest conversations and realistic expectations are critical in such situations.

Prepping for Delivery, Life as a Mom

Conversations about pregnancy lead naturally into discussions about delivery and infant care. Snyder and Latorre both encourage their patients to wear shrinkers at nighttime, especially during pregnancy. They also instruct their patients to take their shrinkers and liners to the hospital to help control fluid retention postdelivery. Lower-limb amputees will want to consider whether to wear their prostheses during delivery, says Artesi.

C-section patients who use orthoses may require additional adjustments to their braces right after delivery, due to the water retention associated with the surgery, according to Desjardins.

Prosthetists and orthotists should plan to schedule appointments for new moms a few weeks after delivery, to determine whether adjustments are necessary as patients' bodies experience additional fluctuations in swelling and weight.

O&P professionals should initiate discussions about device use once the baby arrives and the new mom heads home to care for an infant, often with multiple night feedings. Some clinicians suggest a cradle placed beside the bed so nursing mothers don't have to get out of bed to feed their babies.

"Some patients manage without having to put their prosthesis on" during nighttime feedings, says Latorre. She also notes that patients who don their prostheses "don't need the 'perfect fit' in the middle of the night," and may choose to skip a liner or sock in these circumstances.

Prosthetists and orthotists should plan to schedule appointments for new moms a few weeks after delivery, to determine whether adjustments are necessary as patients' bodies experience additional fluctuations in swelling and weight. Desjardins tries to see patients two to three weeks after the baby has been born, unless everything is fitting without a problem. "I like to see patients within the first month. I want their safety to be a priority," she says.

Snyder tries to see her patients at the six-week mark. She also enjoys having patients bring their newborns to patient appointments. "We become like their family—I feel like the baby's aunt," she says.

Clinicians agree that having their previously pregnant patients come in for follow-up visits—usually accompanied by their infants—is a rewarding experience. The extra time, clinical care, and emotional support provided by orthotists and prosthetists throughout an expectant mom's pregnancy is well worth it when a healthy mom and baby arrive for an appointment. O&P

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