**BABIES**

**Physical therapy helps premature infants thrive**



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Reaching through two holes in the clear walls of the incubator, St. Louis Children’s Hospital physical therapist Kelly Burgio gently pushed down the shoulder of 3-week-old Preston Jolly, born more than 10 weeks early.

She explained to the baby’s mother, April Jolly, that premature babies often hold their shoulders up to their ears. “This just gives the baby that kind of rounded posture,” said Burgio, while teaching Mom how to do the stretch.

Jolly, 32, of St. Louis, noted how calm her baby was. “He usually doesn’t like it when I try to wash his neck or anything like that,” she said.

The importance of physical therapy for babies who arrive weeks before they are supposed to is becoming apparent as researchers learn more about this critical period of development when they were supposed to be in the womb, and what these especially sensitive infants can handle.

“There are such drastic changes in the first year of life, and now we know that in preemies, those changes begin to occur even before their due date,” said Bobbi Pineda, researcher in Washington University’s Program in Occupational Therapy. “That presents a great opportunity to intervene and to help those babies grow so they can make the same milestones as their full-term peers and reach their full potential.”

Improvements in neonatal intensive care have drastically improved the survival rates of babies born several weeks early. But a growing body of research is showing that these babies are more likely than full-term babies to be impaired in many different ways that can persist into adulthood.

“Not only do they have a risk of motor impairment, but subtle learning problems, ADHD, psychiatric disorders and behavioral problems,” Pineda said. “But the good news is that many are resilient and do well. So, our goal is to find out those key elements that help those babies be more resilient and beat the odds.”

Strength, brain development, feeding skills, adequate sleep and stress levels are all closely tied in an infant.

Therapists are learning how including parents in the therapy also helps forge the parent-child bond that can get disrupted with the medical interventions and stress that come with having a baby too early. The therapy is key in giving parents important skills in comforting their babies, which helps the tiny infants thrive.

“It’s a stressful time seeing your baby sick and on support,” said Judi Kleekamp, a physical therapist in the 100-bed neonatal intensive care unit at Mercy Children’s Hospital. “Parents are very scared and have a difficult time bonding with their baby. They are scared to touch and hurt the baby. We are trying to make the parents as big a part of the program as we are because we don’t go home with the baby. That’s our biggest task right now.”

Jolly said she was aware of physical therapy for young children only for those recovering from injuries or with disabilities. “I didn’t realize you could do it for preemies born two to three months early,” she said.

Even her husband, Andwele Jolly, 32, who works as a physical and occupational therapist for injured adults and athletes, was not familiar with therapy for his tiny baby. But it makes sense, he said. “Movement is one of the key things that helps any healing process.”

St. Louis Children’s Hospital nurse practitioner Joan Smith said that in the ’80s, nurses thought very premature babies couldn’t tolerate touch. Research showed this as well, she said, but that was because the babies probably associated touch with a medical procedure.

That idea changed over the past 10 to 15 years as researchers learned more about the development of the premature infant’s brain. “Now we want to simulate relaxing, comforting, positive touch,” she said. Proper holding and positioning can actually help the babies tolerate medical interventions and stabilize their heart rate and breathing**.**

At Mercy and St. Louis Children’s hospitals, sites of the two biggest neonatal intensive care units in the St. Louis area, all babies born before 32 weeks (8 weeks before the normal 40 weeks’ gestation) receive therapy, starting about 30 weeks’ gestation. Babies born later receive the care if they show delays or problems.

Smith is leading a study at St. Louis Children’s that involves testing what is called the M Technique on babies born between 26 and 29 weeks. It is a sequence of touches done with a set pattern, pressure and speed that has mainly been used on the fragile and elderly.

“We are going down to lower ages to see what younger babies can tolerate and how they do,” Smith said.

Much of the physical therapy for preemies involves mimicking the dim, warm, quiet and restrictive environment of the womb.

Full-term babies keep their legs and arms tucked close to their bodies for several weeks after their birth, much as they did in the womb. Their brains have developed enough to keep their muscles in this flexed position, which builds strength and enables them to calm and soothe themselves.

Premature babies, on the other hand, lack the development to hold their limbs close. Instead, therapists use various positioning tools to help build their strength. Nearly two years ago, nurses at St. Louis Children’s Hospital started wrapping babies in a Dandle ROO, a cradle of stretchy fabric that provides individualized resistance, support in different positions, a gel pad for properly molding the baby’s head and a brim to shield the baby’s eyes.

Each baby is unique, and the therapy can change based on things such as muscle tone, tremors, range of motion, transition to sleep and wakefulness and excitability. Therapy includes stretching, massage and different positions. More weight-bearing and upright exercises are added as the baby gets older.

Pineda is testing babies at their gestational ages of 34 and 40 weeks and will test them again at ages 2, 4 and 6 to better structure physical therapy interventions. “We need to learn what to expect at specific time points, even in premature babies, because that will tell us when babies are on target or whether they may need more intensive interventions to catch up,” she said.

One of the biggest challenges, Pineda said, is for parents to continue with therapy. Her previous research has shown that 63 percent of children are not getting the services they need after they leave the hospital.

Because of the risk, Mercy provides a follow-up program for all babies born before 32 weeks. The children are assessed every six months until they reach the age of 2 to make sure they are progressing, Kleekamp said.

As therapists continue to learn about the needs of these tiny newborns, they rely on the babies’ signals to know when they are doing more harm than good. Grimaces, cries and leg extensions are some signs that the babies need a break. Most importantly, the therapists are helping parents learn the signs and cues.

“Doing the bedside training with us to help us know how to touch him and hold him so he doesn’t get stressed is so helpful,” April Jolly said. “It’s much easier to keep him calm knowing that you’re doing the right things.”