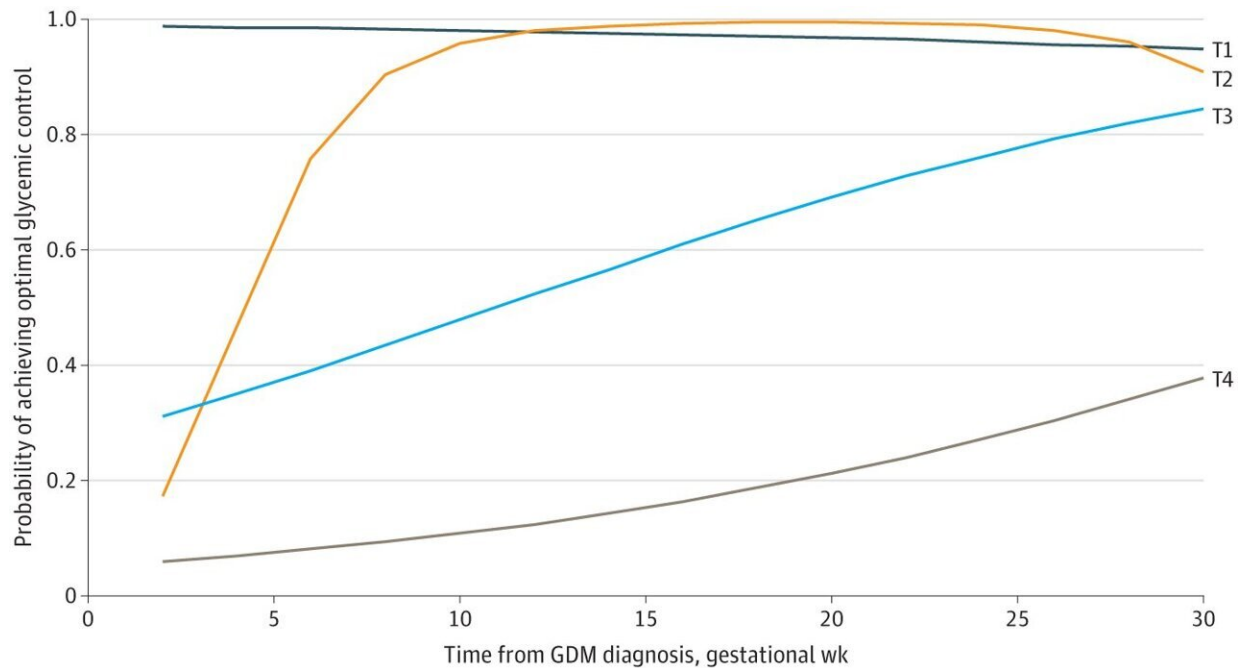


Early control of blood sugar key for gestational diabetes

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Glycemic control trajectories between gestational diabetes diagnosis and delivery. Trajectories T1-T4 were derived using serial self-monitored blood glucose measurements between gestational diabetes diagnosis and delivery. Optimal glycemic control was defined as at least 80% of all self-monitored blood glucose measurements meeting the targets recommended by the American Diabetes Association guidelines and implemented at Kaiser Permanente Northern California. T1 indicates stably optimal (10 528 individuals [39.3%]); T2, rapidly improving to optimal (9151 individuals [34.2%]); T3, slowly improving to near-optimal (4161 individuals [15.5%]); and T4, slowly improving to suboptimal (2934 individuals [11.0%]). Credit: *JAMA Network Open* (2022).

Pregnant patients treated for gestational diabetes had better birth outcomes if they rapidly improved their blood sugar levels soon after diagnosis rather than having slow or no improvement, according to new research from Kaiser Permanente.

The study, published September 29 in *JAMA Network Open*, found that patients who had slower improvement or did not achieve optimal glucose control had a higher risk of cesarean delivery, large-for-gestational-age baby, dislocation of the baby's shoulder during delivery, or admission of the baby to the [neonatal intensive care unit](#).

"Glycemic control is a cornerstone of [gestational diabetes](#) management, so it's important to learn in detail about the trajectory of control between diagnosis and delivery," said senior author Yeyi Zhu, Ph.D., a research scientist with the Kaiser Permanente Division of Research. "This study goes beyond identifying whether a patient has control of their blood sugar and offers insights into the role of timing of glycemic control."

The study also illuminated the factors that enabled patients to manage their [blood sugar levels](#) early: having a healthy weight before pregnancy, avoiding tobacco and alcohol during pregnancy, being engaged in a gestational [diabetes](#) care program, and closely self-monitoring blood glucose levels, which patients were asked to do 4 times a day.

The patients studied were all enrolled in a Kaiser Permanente Northern California Regional Perinatal Service Center, or RPSC, telehealth program for people with gestational diabetes. The program offers standardized telephone counseling on diet, physical activity, glucose monitoring, and medications to reduce [blood sugar](#).

"One thing that stood out to us about patients with early glucose control was that they were more likely to be engaged with the RPSC," said lead author Rana Chehab, Ph.D., a research fellow with the Division of

Research. "They were more likely to have phone calls with nurses and to do the glucose measurements at least 3 times a day."

The authors said it was significant that nearly 90% of the patients who participated in the telehealth support program significantly improved their blood glucose levels before delivering their babies.

"Managing one's blood sugars in pregnancy can be difficult, and we give patients personalized care from very knowledgeable, caring staff members," said study co-author Mara Greenberg, MD, a maternal-fetal medicine specialist with The Permanente Medical Group who directs the Regional Perinatal Service Center. "This study shows great outcomes for the majority of our patients and we're very proud of that."

Four trajectories of glucose control

Kaiser Permanente patients in Northern California who are pregnant are routinely screened for gestational diabetes toward the end of the second trimester of pregnancy and during the study period, patients at high-risk of developing gestational diabetes were screened earlier in pregnancy, in accordance with national standards. Gestational diabetes can increase the risk of complications for the mother and child, including preeclampsia, early birth, and large-for-gestational-age baby, along with long-term metabolic and cardiovascular problems.

The study included 26,774 individuals enrolled in the gestational diabetes program at Kaiser Permanente in Northern California between January 2007 and December 2017. The researchers analyzed the data on glucose control levels between diagnosis and delivery and found that patients were clustered into 4 different trajectories. About 40% were "stably optimal," starting out with good control and maintaining it. About 34% were "rapidly improving to optimal," with a trajectory showing rapid improvement to optimal levels. Glucose control was labeled

"optimal" when it met targets recommended by the American Diabetes Association.

The third category, "slowly improving to near-optimal," with 15% of patients, had slow improvement after diagnosis of gestational diabetes until delivery. The fourth, with 11%, were "slowly improving to suboptimal," with slow improvement over time that did not reach optimal levels before delivery.

The study adds important detail to the experience of managing gestational diabetes, said co-author Assiamira Ferrara, MD, research scientist and associate director of the Division of Research. "Previous studies categorized women as being in control of glucose or not, but we wanted to know if the timing of [glucose](#) control attainment mattered in terms of outcomes, and it does," she said.

Future research could compare patients in various trajectories to learn how they differ. "Some patients are able to get [glycemic control](#) relatively quickly and stay there and other patients struggle, and we don't always know why," said Dr. Greenberg.

More information: Glycemic Control Trajectories and Risk of Perinatal Complications Among Individuals With Gestational Diabetes, *JAMA Network Open* (2022).

Provided by Kaiser Permanente

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