

Study finds wide range in pregnancy length

By Monica Frazier

Researchers in the NIEHS Epidemiology Branch found a much broader range in the length of human pregnancies than is usually considered average. Their [results](http://www.ncbi.nlm.nih.gov/pubmed/23922246), published Aug. 6 in the journal *Human Reproduction*, could lead to a different way of assigning due dates to pregnancies in the future.

The authors found that the median time from ovulation to live birth was 268 days, or 38 weeks, 2 days, but that this time ranged from 208 to 284 days. Most surprising was the 37-day range of gestational length among term births within a relatively select group of otherwise healthy, normal births. These findings were based on the study of 125 pregnancies from the North Carolina Early Pregnancy Study.

A novel detection method

One fundamental problem that has historically plagued pregnancy length studies is the inability to accurately determine when gestation began. Physicians typically use a combination of the onset of the woman's last menstrual period and ultrasound measurements to determine a pregnancy's due date.

In this study, for the first time, levels of hormones found in daily urine samples were used to determine when the subjects ovulated. By accounting for cases where medical interventions were used to shorten the length of pregnancy, the researchers were able to determine a range of gestation lengths in normal births.

[Anne Marie Jukic, Ph.D.](#), the lead author on this publication and a postdoctoral fellow in the Reproductive Epidemiology Group headed by [Allen Wilcox, M.D., Ph.D.](#), said the results were surprising.

"We know that length of gestation varies among women, but some part of that variation has always been attributed to errors in the assignment of gestational age," Jukic explained. "Our measure of length of gestation does not include these sources of error, and yet there are still five weeks of variability. It's fascinating."

Unique rates of development

The fact that normal pregnancy can have such a wide range in length suggests that development rates are individualized. Indeed, the researchers found that the length of a pregnancy tends to correlate with other pregnancy lengths from the same woman, supporting this notion.

In addition to the start of ovulation, the number of days between fertilization and implantation was determined using the rise in the level of the hormone human chorionic gonadotropin. It was found that the longer the time between fertilization and implantation, the longer the gestation tended to be.

In addition, later rises in the hormone progesterone were associated with nearly two weeks shorter gestations than those with an early rise. These findings could indicate that each pregnancy has an intrinsic developmental pace.

There is potential that this study, and future studies, could be used to change the way obstetricians assign a due date for pregnancies. Jukic suggested that a range of dates may be better used for physicians, as many women who reach their assigned due date are often distressed if that date passes.

"Given the variability we saw in our data, it does seem appropriate to give women a range of dates in which they have a certain probability of delivering."

*Citation: [Jukic AM, Baird DD, Weinberg CR, McConaughy DR, Wilcox AJ.](#)
(<http://www.ncbi.nlm.nih.gov/pubmed/23922246>)*



Jukic said of the Early Pregnancy Study used for this research, "[It] has been making solid contributions to the understanding of reproduction for almost thirty years." She added that the same study could be used to answer additional research questions that could benefit prenatal care methodology. (Photo courtesy of Steve McCaw)



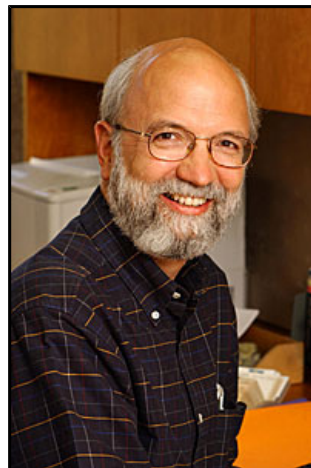
Co-author [Donna Baird, Ph.D.](#), leader of the Women's Health Group in the Epidemiology Branch, provided expertise in reproductive biology and endocrinology to the study. (Photo courtesy of Steve McCaw)

2013. Length of human pregnancy and contributors to its natural variation. Hum Reprod; doi:10.1093/humrep/det297 [Online 6 August 2013].

(Monica Frazier, Ph.D., is an Intramural Research Training Award fellow in the NIEHS Mechanisms of Mutation Group.)



Clarice Weinberg, Ph.D., head of the Biostatistics Branch and a co-author on the study, has designed and overseen analysis of the Early Pregnancy Study's data collection since its origin. (Photo courtesy of Steve McCaw)



Wilcox was corresponding author on the paper. (Photo courtesy of Steve McCaw)

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