

Length of human pregnancies can vary naturally by 5 weeks

The length of a human pregnancy can vary naturally by as much as 5 weeks, according to research from the National Institute of Environmental Health Sciences, Durham, USA (Jukic et al, 2013).

Normally, women are given a date for the likely delivery of

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their baby that is calculated as 280 days after the onset of their last menstrual period. Yet only 4% of women deliver at 280 days and only 70% deliver within 10 days of their estimated due date.

Researchers in the USA have been able to pinpoint the precise point at which a woman ovulates and a fertilized embryo implants in the womb during a naturally conceived pregnancy, and follow the pregnancy through to delivery. They used this information to calculate the length of 125 pregnancies.

The researchers took information from daily urine samples collected by women taking part in an earlier study, the North Carolina Early Pregnancy Study, which took place between 1982–5 and followed 130 singleton pregnancies from unassisted concep-

tion through to birth. The women completed daily diaries and collected daily first-morning urine samples for 6 months or until the end of the eighth week if they became pregnant.

The urine samples were analysed for three hormones: hCG (human chorionic gonadotropin), estrone-3-glucuronide and pregnenediol-3-glucuronide. The day of ovulation was identified by the drop in the ratio between oestrogen and progesterone.

‘Since the embryo secretes hCG, and mothers generally have little to no hCG in their urine when they are not pregnant, we used the earliest increase in hCG to indicate implantation,’ explained Dr Anne Marie Jukic, a postdoctoral fellow in the Epidemiology Branch at the National Institute of Environmental Health

Sciences. ‘We found that the average time from ovulation to birth was 268 days – 38 weeks and 2 days. However, even after we had excluded six pre-term births, we found that the length of the pregnancies varied by as much as 37 days.’

Dr Jukic concluded: ‘We were a bit surprised by this finding. 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. Our measure of length of gestation does not include these sources of error, and yet there is still 5 weeks of variability. It’s fascinating.’

Jukic AM, Baird DD, Weinberg CR, McConaughey DR, Wilcox AJ (2013) Length of human pregnancy and contributors to its natural variation. *Hum Reprod* Aug 6 (Epub ahead of print)

Single antibiotic as effective as and safer than combination therapy to treat blood infections in children

Children with invasive bloodstream infections treated with a single antibiotic are just as likely to overcome their infections as those who get two-drug therapy, but at half the risk of drug-induced kidney damage, according to results of a new study, believed to be the first of its kind in paediatric patients (Tamma et al, 2013).

‘Many paediatricians continue to prescribe combination-drug regimens under the false assumption that two is better than one, but our study suggests otherwise – one is often just as good as two and a lot safer,’ says study lead investigator and infectious disease specialist Dr Pranita Tamma.

For their analysis, investigators reviewed 879 cases of children treated at Johns Hopkins Children’s Center between 2002 and 2011 for bloodstream infections caused by Gram-negative bacteria.

Of the 879 patients, 537 (61%) received combination treatment. Patients on dual and single treatment had a similar risk of death, with 7.6% of patients in the combination therapy dying compared with 6.7% in the single-drug group. However, patients who got the combination therapy were twice as likely to suffer kidney damage: one-quarter of those on the dual-antibiotic regimen developed kidney damage, compared

with 10% of those getting the single-drug treatment.

Part of the dual regimen includes aminoglycosides, well-known for their toxic effects on the kidney but, the researchers point out, the benefits of such treatment outweigh the risks in critically ill patients or in patients suspected to be infected with highly drug-resistant organisms.

They caution that the need for continued dual therapy should be re-assessed as soon as bacterial cultures reveal what antibiotics the infectious organisms are susceptible to – usually within 48–72 hours of diagnosis.

Dr Tamma and her team say that their finding that

children treated with the two-drug approach had twice the risk of kidney damage at no additional clinical benefit challenges the common practice of preemptively and liberally prescribing combination drug treatments for use in children with bloodstream infections.

‘The aminoglycoside portion of the regimen should be continued only in cases of highly drug-resistant infections,’ concluded Dr Tamma.

Tamma PD, Turnbull AE, Harris AD, Milstone AM, Hsu AJ, Cosgrove SE (2013) Less is more: combination antibiotic therapy for the treatment of Gram-negative bacteremia in pediatric patients. *JAMA Pediatr* Aug 5 (Epub ahead of print)