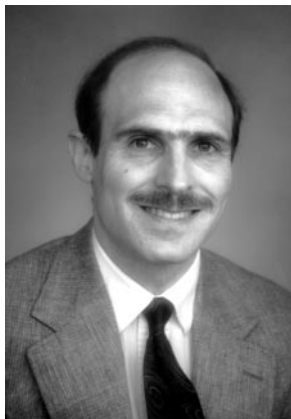


Gestational Age

Not Always What It Seems



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Establishing an accurate date of the last menstrual period (LMP) is an important task of the initial antenatal visit.¹ All other methods of estimating gestational duration were originally validated against well-established menstrual dates. Nevertheless, even an accurate LMP date obtained from a woman who keeps a prospective menstrual calendar might have sources of inaccuracy in estimating gestational duration. Information obtained from women who are not actively keeping track of their menstrual periods is even more error-prone, and the date of the LMP is almost impossible to interpret when a woman's menstrual cycles are irregular.¹ Although in the clinical setting these errors can be identified and corrected either by a more thorough history or by sonography, the LMP-derived gestational age in large administrative databases is fraught with error. In the birth certificate database, the distribution of birth weights among infants born at 28–32 weeks of gestation by menstrual dates is not Gaussian (“normal”). Rather, the birth weight distribution among these infants is a curve with two peaks: one at the expected weight for infants of the stated gestational age and a second at approximately 3,000 g.² Most investigators believe the incongruous birth weight represents term pregnancies with menstrual dates that are in gross error. Therefore, these pregnancies are incorrectly called preterm. One study³ comparing sonographic with menstrual dates from a large database found that only 78% of pregnancies designated preterm (less than 37 completed weeks) by menstrual dates were actually preterm, according to a confirming sonogram.

When a woman presents in labor or with a pregnancy complication, the managing clinician will evaluate the entire prenatal course, integrating menstrual history, physical findings, laboratory values, and if available, sonography to derive the best obstetric estimate. Because this estimate represents the integration of multiple sources, it is not surprising that it is usually more accurate than an estimate based only on LMP. It is also not surprising that a neonate whose gestational duration is less than 37 weeks according to multiple sources will appear more likely to die than one of comparable duration according to an uncorroborated LMP. The latter alleged “preterm” infant may be born at term, but the gestational age is incorrectly estimated.

As Joseph et al⁴ note (p. 813), the official statistics for gestational age in the United States, published by the National Center for Health Statistics, are based on menstrual dating. This stands in contrast to Canada, as well as to the Swedish and Norwegian medical birth registries, where the gestational age is provided directly by the birth attendant, presumably based on the best clinical estimate. The difference in source of gestational age between vital records in the United States and Canada likely accounts for Joseph et al's observations that the occurrence of preterm birth, and the survival of preterm infants compared to those born

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at term, differs between the two countries when the basis for the United States estimate is the LMP. The countries behave similarly, however, when the “clinical estimate” of gestational age is substituted for LMP in U.S. vital records.

Does this result require that the United States change how preterm birth is measured in official statistics? In March 2005, the U.S. Centers for Disease Control and Prevention (the parent agency of the National Center for Health Statistics) held a workshop on the accuracy of gestational age in vital records. At this workshop, the National Center for Health Statistics staff were under no illusions regarding the accuracy of gestational age derived solely from the LMP. Rather, a conscious decision was made to base the official gestational age data on a less accurate measure of known origin used without change for decades (LMP). The LMP was preferred over a perhaps more accurate measure not collected by all jurisdictions, the basis of which was unspecified and the source of which may be changing over time (clinical estimate).

During the era studied by Joseph et al,⁴ the 1989 version of the birth certificate was in use. A new version was issued in 2003. In the instructions for completing the 1989 certificate, specific directions are provided for where to obtain the LMP and what to do if the data are missing. Unfortunately, the instructions for recording the clinical estimate are less specific. The 1989 instructions state only to enter the length of gestation as estimated by the birth attendant and not to base this estimate on the LMP. No further guidance is provided for what data should be used to derive the estimate, when during pregnancy it was derived (even the newborn physical examination would be acceptable), nor whether rounded or completed weeks should be used.⁵ The instructions for the 2003 revision⁶ improved somewhat, but the 2003 revision is only gradually being implemented.

First and foremost, the birth certificate is a legal document. Its secondary functions are to enable public health agencies to monitor the nation’s demographic changes and perinatal health over time and to conduct research on maternal and infant health. Monitoring trends over time has been given higher priority than making international comparisons, which presumably is why the LMP continues to be the basis

for national surveillance of preterm birth. In addition, each jurisdiction in this country has authority to determine what data to collect on vital records, and in the era studied by Joseph et al⁴ the largest state, California, did not collect clinical estimates on its birth certificates. Basing the national rate of preterm birth on a measure that excludes California would defeat the goal of conducting national surveillance, and changes over time in the number of states collecting the clinical estimate would further complicate surveillance. Of course, the birth certificate database (with individually identifying information removed) is publicly available and researchers may use it in any way they wish.

Joseph et al’s⁴ results are of primary interest to researchers in maternal and child health and perinatal epidemiology, but this paper should remind clinicians that the mundane task of completing a birth certificate can impact measures of the nation’s health. Therefore, it is both good clinical and public health practice to obtain, as early in pregnancy as possible, an accurate date of the LMP. When the time comes to complete the birth certificate, it is important to assure that this information is transferred accurately onto the form.

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