Validating gestational age ICD-10 codes in claims data with physician-reported gestational age on non-invasive prenatal screening

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Claire Miller, Devika Chawla
Myriad Genetics, Inc., Salt Lake City, UT, USA

Objectives

- Real-world evidence studies on pregnancy often rely on insurance claims data, yet the accuracy of ICD-10 diagnostic codes for estimating gestational age (GA) remains unclear.
- Estimating GA is crucial for accurate categorization of pregnancy outcomes, like miscarriage, stillbirth, and preterm birth.
- This study investigated concordance between GA ICD-10 codes and physician-reported GA using a linked dataset of clinical and insurance claims data.

Methods

- We identified eligible patients in the Myriad Genetics-Komodo Health data, a linked database containing patients who received prenatal cell-free DNA (pcfDNA) screening from Myriad Genetics, Inc. from September 2015 through January 2023 and had claims in Komodo Healthcare Map™. The data were linked using Datavant tokenization.
- We restricted to patients with continuous enrollment in closed claims for the estimated duration of pregnancy.
- We described usage patterns for Z3A ICD-10 codes, which specify week of pregnancy, in this real-world pregnancy cohort. (Example: Z3A20 refers to 20 weeks gestation).
- We estimated mean difference, concordance (Lin's concordance correlation coefficient), and percent agreement (within 1 and 2 weeks) between Z3A ICD-10 codes and physician-reported GA from the pcfDNA intake form.

Conclusions

- Utilizing a uniquely linked database of pregnant patients, we observed strong concordance between Z3A diagnostic codes that indicate GA and physician-reported GA.
- These results indicate that studies utilizing claims data for pregnancy studies can rely on Z3A ICD-10 codes for reasonable GA estimates.
- However, the new ICD-11 coding system, which may be implemented in the U.S. as early as 2025, may not have equivalent week-specific GA codes.

Disclosures: CM and DC are employees of Myriad Genetics, Inc.

Results

Of 202,565 pregnant patients eligible for analysis, 174,406 (86.1%) had at least 1 ICD-10 code that indicated GA.

Table 1. Percent agreement between GA from ICD-10 code and physician-reported GA within 1 and 2 weeks by diagnosis code

ICD-10 code	Within +/- 1 week of physician-reported GA	Within +/- 2 weeks of physician-reported GA
Z3A08	90.1%	94.5%
Z3A09	91.7%	95.2%
Z3A10	92.1%	95.3%
Z3A11	93.3%	95.8%
Z3A12	94.4%	96.5%
Z3A13	93.2%	95.9%
Z3A14	89.8%	93.6%
Z3A15	91.7%	94.7%
Z3A16	92.5%	95.2%
Z3A17	92.5%	95.6%
Z3A18	94.0%	96.4%
Z3A19	95.0%	97.0%
Z3A20	94.7%	96.6%
Z3A21	93.2%	95.9%
Z3A22	91.3%	94.3%
Z3A23	90.8%	93.5%
Z3A24	90.7%	93.6%
Z3A25	91.3%	94.7%
Z3A26	91.9%	95.6%
Z3A27	93.7%	96.3%
Z3A28	93.9%	96.4%
Z3A29	93.7%	96.7%
Z3A30	93.0%	96.2%
Z3A31	93.8%	96.8%
Z3A32	94.2%	97.0%
Z3A33	94.1%	97.2%
Z3A34	94.1%	97.3%
Z3A35	94.9%	97.7%
Z3A36	95.2%	97.9%
Z3A37	95.0%	97.7%
Z3A38	95.1%	97.7%
Z3A39	95.1%	97.9%
Z3A40	94.7%	97.6%
Z3A41	93.5%	96.9%
Z3A42	69.4%	75.3%
All	93.7%	96.5%

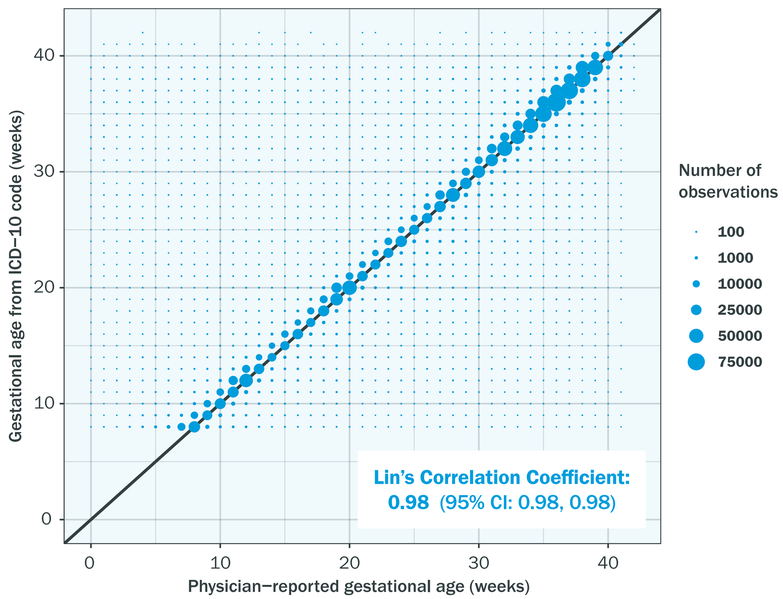
Codes indicating GA of 36-39 weeks had the strongest agreement with physician-reported GA: ≥95.0% of these 4 codes were within +/- 1 week of physician-reported GA, and nearly 98% were within +/- 2 weeks.

Table 2. Top 10 most common gestational age ICD-10 codes observed during pregnancy

ICD-10 Code	Description	Frequency (%) of all codes
Z3A36	36 weeks gestation of pregnancy	138,717 (6.4%)
Z3A37	37 weeks gestation of pregnancy	118,730 (5.5%)
Z3A39	39 weeks gestation of pregnancy	110,915 (5.2%)
Z3A01	Less than 8 weeks gestation of pregnancy	108,801 (5.1%)
Z3A38	38 weeks gestation of pregnancy	105,861 (4.9%)
Z3A35	35 weeks gestation of pregnancy	101,494 (4.7%)
Z3A34	34 weeks gestation of pregnancy	88,776 (4.1%)
Z3A32	32 weeks gestation of pregnancy	84,723 (3.9%)
Z3A20	20 weeks gestation of pregnancy	83,379 (3.9%)
Z3A00	Weeks of gestation of pregnancy not specified	75,519 (3.5%)

The most commonly used Z3A codes corresponded to late pregnancy (34-39 weeks), 20 weeks, or very early in pregnancy (<8 weeks). These codes were typically used in the 2nd or 3rd diagnosis positions on the claim (65.1% of codes) along with more specific codes as the primary diagnosis, such as "Single live birth", "Encounter for antenatal screening", or "Encounter for supervision of pregnancy".

Figure 1. Correlation between gestational age from ICD-10 codes throughout pregnancy and physician-reported gestational age from prenatal screen order form



The mean difference between physician-reported GA and code-estimated GA was −0.29 weeks (SD: 0.2), suggesting that GA estimated from ICD-10 codes tended to be higher than physician-reported GA. GA from both sources were highly concordant (Lin's correlation coefficient: 0.98; 95% CI: 0.98, 0.98).