Information on the expected delivery date in German claims data: Assessing its potential to estimate the beginning of pregnancy

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CONFLICT OF INTEREST

NW, UH and TS are working at the Leibniz Institute for Prevention Research and Epidemiology – BIPS. Unrelated to this study, BIPS occasionally conducts studies financed by the pharmaceutical industry. Almost exclusively, these are post-authorization safety studies (PASS) requested by health authorities. The studies and the resulting publications are not influenced by the pharmaceutical industry. KD and MO declare no conflict of interest.

BACKGROUND

- Electronic health care databases offer great potential to investigate drug safety in pregnancy.
- A key prerequisite is an appropriate algorithm to estimate the beginning of pregnancy as teratogenic effects depend on the gestational age at exposure.
- However, important information such as the last menstrual period (LMP) is generally not recorded.
- The beginning of pregnancy is usually estimated as the date of birth minus a fixed length of pregnancy, using different values for term and preterm births.
- German claims data offer the possibility to estimate the beginning more precisely by using the the expected delivery date (EDD) which is based on the LMP or ultrasound examinations in early pregnancy and can be coded once or more often during a pregnancy.

OBJECTIVE

- To assess the availability, consistency and plausibility of the EDD in German claims data.

METHODS

- Data source: GePaRD with claims data from 4 German statutory health insurance providers (SHIs), including >20 million persons insured with one of the participating SHIs since 2004 or later.
- Selection of all live births (1) of women 12–50 years from 2005–2015 with ≥3 quarters of continuous insurance before birth.
- For each live birth, available EDDs were extracted in the 3 quarters before and in the quarter of birth.
- Assessment of the number of EDDs per pregnancy and their concordance.
- Calculation of difference between EDD and actual birthdate for preterm births, term births and births after due date.
- Assessment of timing of prenatal examinations with specific time-windows.

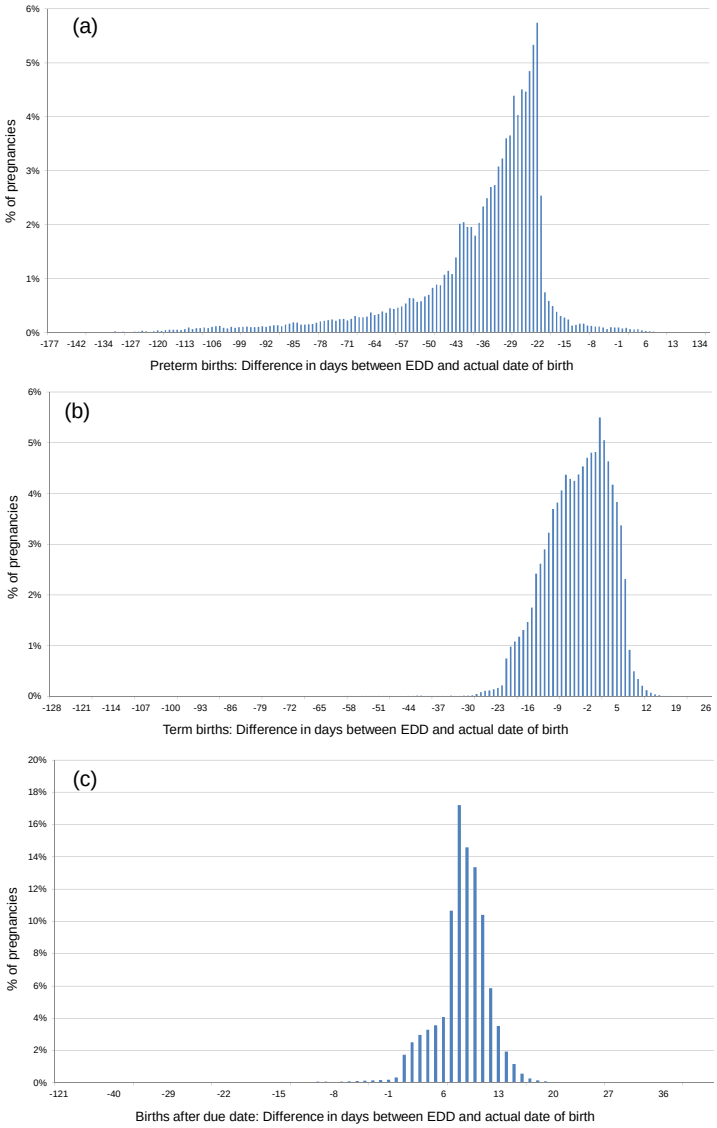

Figure 1: Difference between EDD and actual birthdate stratified in preterm births (a), term births (b) and births after due date (c).

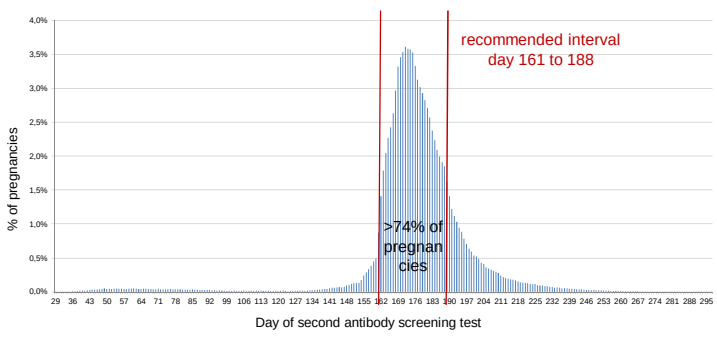

Figure 2: Timing of second antibody screening test if beginning of pregnancy is estimated by EDD – 280 days

RESULTS

- 1,018,310 live births (7% preterm, 79% term, 14% after due date).
- In 82% of pregnancies ≥ 1 EDD was available. In 79% of these pregnancies ≥ 2 all concordant EDDs were available, in 6% only one EDD and in 15% ≥ 2 not all concordant EDDs were identified.
- The median difference between discordant EDDs was 6 days (interquartile range 3 – 10 days).
- In pregnancies with concordant EDDs, difference of EDD and the actual birth date (Fig. 1) and timing of examinations with specific time-windows was plausible (Fig. 2).
- Results were similar for pregnancies with only one EDD and for those with discordant EDDs when selecting the most often coded EDD.

CONCLUSION

- In >80% of pregnancies with live births at least one EDD was coded.
- Our analyses suggest that by using EDD information the beginning of pregnancy can be plausibly identified in German claims data by re-subtracting the biologically expected duration of a pregnancy.

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REFERENCES

(1) Wentzell N, Schink T, Haug U, Ulrich S, Niemeyer M, Mikolajczyk R. (2018) Optimizing an algorithm for the identification and classification of pregnancy outcomes in German claims data. PDS 2018 doi: 10.1002/pds.4588.

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