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Oral Presentations

Exploring uniformity of gestational diabetes screening and diagnosis using real-world electronic health record data

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Purpose: Gestational diabetes (GDM) surveillance frequently relies on International Classification of Disease (ICD) codes to identify cases. GDM diagnoses can be based on several criteria including Carpenter & Coustan (C&C) and International Association of Diabetes in Pregnancy Group (IADPSG). Our objectives were to describe GDM testing patterns within one large health system and evaluate how well diagnostic coding corresponds with laboratory-based GDM criteria.
Methods: Data were extracted from electronic health records of women that gave birth in Kaiser Permanente Southern California hospitals. From 2013-2017, 130,146 non-diabetic women with a singleton pregnancy and first trimester entry into prenatal care were identified. All 50-g glucose challenge tests (GCT) and 75-g and 100-g oral glucose tolerance test (OGTT) results were extracted; the last result determined GDM status by standard laboratory criteria. The laboratory-based definition (gold standard) was compared to ICD-9 (648.8)/ICD-10 (O24.8) codes. Diagnostic validity measures and 95% confidence intervals (95%CI) are presented.
Results: Number of prenatal GCTs and OGTTs per woman ranged from 0-6. Most had routine testing: 50-g only (39.4%), 100-g after 50-g (15.3%), or 75-g only (10.2%). Other common patterns included two 50-g (16.3%), two 50-g plus one 100-g (6.2%), one 50-g plus two 100-g (2.9%), and two 75-g (1.9%); 4.2% were untested. Test results and ICD-codes yielded GDM prevalence of 9.9% and 14.2%, respectively. Among untested women, 39.0% had GDM codes. Sensitivity (95%CI) was 98.8% (98.6%-99.0%) for the C&C criteria; positive predictive value (PPV) was 58.0% (57.1%-58.7%) due to false positives. Sensitivity (56.6%, 54.9%-58.4%) and PPV (44.6%, 43.1%-46.2%) were low for the IADPSG criteria. Negative predictive value was good for all criteria.
Conclusions: GDM testing is based on clinician preference and GDM codes may be applied inconsistently. While most women that met the laboratory criteria had diagnosis codes, codes alone overestimated the true prevalence of laboratory-confirmed GDM.

The impact of missing toxicology reports on overdose death surveillance: 2010-2016

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Purpose: The classification of overdose deaths is often geographically and demographically inconsistent, leading to misconstrued estimates of drug overdose rates across time and place. We test how demographic and geographic characteristics of drug overdose decedents are associated with incomplete toxicology reporting, and measure changes in missingness rates and their associations with decedent characteristics over time.
Methods: We estimated the percentage of overdose deaths reported in the National Vital Statistics System with missing toxicology results from 2010-2016, overall and by decedents' demographic and geographic characteristics. We used a multi-level model to evaluate prevalence of missingness by decedent characteristics, accounting for geographic clustering.
Results: One-fifth of 351,345 drug overdose deaths from 2010-2016 did not indicate a specific drug, declining from 24.4% in 2010 to 14.6% in 2016. In a multi-level model controlling for all predictors, deaths were less likely to have missing information if they occurred in metro counties compared to rural counties (aOR: 0.31, 95%CI: 0.24, 0.41) and in counties with medical examiners versus coroners (aOR: 0.57, 95%CI: 0.47, 0.69). Male decedents were less likely to have missing information than females (aOR: 0.73, 95% CI: 0.69, 0.77), and non-Hispanic whites were more likely to have missing information than non-Hispanic blacks (aOR: 1.31, 95%CI: 1.2, 1.4).
Conclusion: The percentage of deaths with missing toxicology information has declined over time, but demographic and geographic differences in missingness persist. Ignoring differentially missing data in surveillance reports may adversely affect the validity of inferences. Creative data solutions are necessary to facilitate valid comparisons in drug-specific overdose deaths across populations and time.

Risk of viral gastroenteritis associated with continuous use of proton pump inhibitors: a matched retrospective cohort study based on prospectively collected drug dispensing data

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Purpose: An increased risk of acute gastroenteritis (AG) of bacterial origin has been associated to proton pump inhibitors (PPI) therapy. The risk of community acquired AG during winter epidemics, mostly of viral origin, has not been studied. The aim of this study was to investigate the association between continuous PPI therapy and AG occurrence during winter epidemics.
Methods: A matched retrospective cohort study was conducted using prescribed drug dispensing data prospectively collected during winter 2015/16 in a database covering nearly 30% of French drugstores. Each patient exposed to continuous PPI therapy was matched to three PPI unexposed patients, based on year of birth, gender and main dispensing drugstore. Occurrence of viral AG was the main outcome compared between the two exposure groups. Relative risks (RR) were estimated using a log-binomial model adjusted on age, gender and treatments for chronic conditions, overall and by age groups.
Results: There were 233 596 exposed (median age 70 years, 56.3% females) and 626 887 matched unexposed patients (median age 71 years, 55.8% females) included in the study. The risk of AG was significantly higher among exposed patients compared to those unexposed, overall (adjusted RR 1.80, 95%CI 1.71–1.88), and among those aged 45-64 (aRR 1.64, 95%CI 1.52–1.78), 65-74 (aRR 2.19, 95%CI 1.98–2.42) and 75 years and more (aRR 1.98, 95%CI 1.82–2.15).
Conclusion: Continuous exposure to PPI was associated with an increased risk of developing AG during periods of highest circulation of enteric viruses, particularly among individuals aged 45 years and over.