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Coding System: A Source of Variability in Reported Prevalence Rates of Atrial Septal Defect

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Objective

To define whether use of different coding systems for state birth defects surveillance systems influenced prevalence rates of Atrial Septal Defects (ASD) reported between 2005 and 2009 in the United States

Introduction

The variation in prevalence rates of ASD across different states may either indicate true differences across states or represent an artifact of case identification. Specification of the evaluative process by which cases are coded is necessary when comparing the ASD prevalence rates across states and provides insight awareness when evaluating for differences in ASD occurrences.

Methods

Data from 2012 Population-Based Birth Defects Surveillance Programs Report, including 2005-2009 data of 35 states, were analyzed. Aggregated data were weighed by frequencies of total ASD cases and total live births. Coding systems were categorized into: (1) CDC or ICD-9-CM excluding Patent Foramen Ovale (PFO), and (2) ICD-9-CM not excluding PFO. Poisson regression was used to examine the association of reported prevalence rate of ASD with coding systems adjusting for surveillance population, case ascertainment methods, time of data collection, gestational age, and inclusion of probable cases. An interaction term between coding systems and case ascertainment methods was evaluated in multiple regression models. SAS 9.3 was used for data analysis and alpha was set at 0.05 for statistical significance.

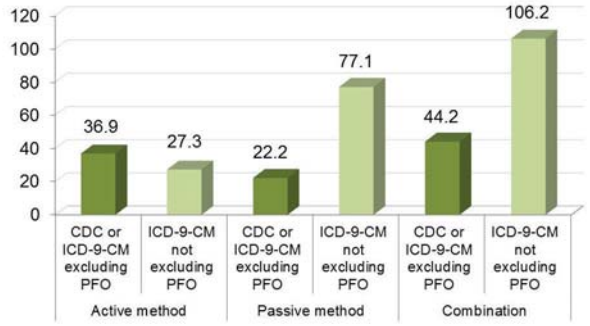
Results

The prevalence rates of ASD across states were reported between 12.98 and 170.25 per 10,000 live births. The overall prevalence rate of ASD was about two times lower in surveillance systems using CDC coding system or ICD-9-CM with exclusion of PFO (41.88) than in those using ICD-9-CM coding system without exclusion of PFO (84.39). Effect of coding system on prevalence rate of ASD was different among case ascertainment methods. Based on the adjusted model, the rate was around three times higher if ICD-9-CM without exclusion of PFO was used in surveillance systems where passive (prevalence ratio [PR]: 3.26, CI95%: 2.87, 3.70) or combination method (PR: 2.78, CI95%: 2.71, 2.85) was applied; while the rate was found just slightly lower if that coding system was used in surveillance systems where active method (PR: 0.87, CI95%: 0.80; 0.94) was applied.

Conclusions

The ASD prevalence rates across states significantly vary according to the type of coding system used. Moreover, this variation is further modified based on the type of case ascertainment method employed. Careful consideration needs to be given when making a comparison of prevalence rates of ASD across states. Adopting a national standard among state surveillance systems would allow for more consistent comparisons of ASD, and perhaps, other birth defects in the United States.

Figure 2: Prevalence Rate (per 10,000 live births) of ASD, by coding systems and ascertainment methods, US 2005-2009



Keywords

coding systems: CDC, ICD9/10-CM; Atrial Septal Defects; Birth Defects Surveillance; Poisson regression

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