

Birth Defects Surveillance in Florida: Infant Death Certificates as a Case Ascertainment Source

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BACKGROUND: Completeness of case ascertainment is a concern for all birth defects registries and generally requires a multisource approach. Using infant death certificates as one case ascertainment source may identify cases of birth defects that would have otherwise been missed. We sought to examine the utility of adding infant death certificates to the Florida Birth Defect Registry's (FBDR) case ascertainment methods and to determine what factors are associated with the registry's failure to capture infants that die from birth defects. **METHODS:** FBDR cases from 1999 to 2006 were matched to a statewide linked birth-infant death file. Descriptive statistics were used to assess the FBDR's ability to capture infants with a birth defect-related cause of death (COD) and identify conditions most commonly missed. Factors associated with the FBDR's failure to capture an infant who died from a birth defect during the first year of life were identified with logistic regression models. **RESULTS:** There were 2558 (21.1%) infant deaths with birth defects listed as the underlying or an associated COD, of which the FBDR captured 73.3%. Most often missed defects included malformation of the coronary vessels, lung hypoplasia/dysplasia, anencephaly, and unspecified congenital malformations. Logistic regression identified gestational age/birth weight, age at death, autopsy decision, plurality, adequacy of prenatal care, and maternal nativity as factors associated with the FBDR's failure to capture an infant with a birth defect-related COD. **CONCLUSIONS:** Although the overall potential contribution of infant death certificates to the FBDR is small, this source contributes to the prevalence of specific defects. *Birth Defects Research (Part A) 88:1017–1022, 2010.* © 2010 Wiley-Liss, Inc.

Key words: birth defects; surveillance; death certificates; Florida; case ascertainment

INTRODUCTION

Serious birth defects, the leading cause of infant mortality in the United States, occur in 1 of 33 live births and account for over 20% of all infant deaths (Mathews and MacDorman, 2008; Centers for Disease Control and Prevention, n.d.). Birth defects surveillance systems are used to monitor annual trends of defects to detect and investigate unusually high rates, identify causes of birth defects, aid in health policy decisions, and support the development and evaluation of prevention programs (Reefhuis et al., 2002; Correa-Villasenor et al., 2003a). Surveillance data also serve as the basis for epidemiologic and clinical studies. Therefore, completeness and accuracy of case ascertainment is a concern for any birth defects registry. Surveillance programs that rely on passive case-finding strategies, such as the Florida Birth Defects Registry

(FBDR), may have greater susceptibility to underreporting (Correa-Villasenor et al., 2003b; Boyd et al., 2005).

Birth defects case ascertainment should be comprehensive and collect data from multiple sources. Data sources utilized for case ascertainment vary not only between those utilizing active and passive case-finding methods, but also within these categories. Passive case ascertainment relies on the submission of case reports by data sources (e.g., hospital reports, specialty treatment clinics, developmental centers); some surveillance programs also

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regard administrative health records as passive data sources (e.g., hospital discharge indices, vital records) to identify birth defects. Medical information in these administrative data sources are most often reported as International Classification of Disease (ICD) codes, as checkboxes for specific conditions, and less commonly in text format. Active case ascertainment involves direct review of source documents, with surveillance staff identifying potential birth defects cases at data sources, followed by medical record review or abstraction for case confirmation. Although many states utilize linked death certificates to examine infant survival and case fatality patterns, the utility of infant death certificates as an independent source for birth defects registries employing passive data collection strategies has not been well documented.

The objectives of this study were to examine the utility of adding infant death certificates to the FBDR's case ascertainment methodology and to determine factors associated with failure of the FBDR to capture infants that die from birth defects in the first year of life.

METHODS

The FBDR operates as statewide, population-based surveillance program using passive case-finding methods to monitor birth defects identified within the first year of life among infants born alive to Florida resident mothers. Cases are identified by collecting information from the Florida Office of Vital Statistics birth records, Agency for Health Care Administration (AHCA) hospital discharge data, and service-related data sets from the Florida Children's Medical Services program. Birth defect cases are identified using ICD, 9th edition, Clinical Modification (ICD-9-CM) codes. Records with diagnosis codes reportable to the registry are identified, and records from the various input databases are merged using deterministic record linkage algorithms to develop an unduplicated inventory of infants with birth defects in Florida.

All FBDR cases from 1999 to 2006 were matched to a linked birth-infant death file obtained from the Office of Vital Statistics. Demographic and reproductive characteristics, as well as birth outcome data, were obtained from the linked file. Maternal race/ethnicity was determined based on maternal self-report and was first grouped by ethnicity (Hispanic or non-Hispanic), with the non-Hispanic (NH) group subdivided by race (white, black, and other). Maternal nativity was dichotomized as U.S. or foreign-born (born outside the 50 U.S. states). Maternal age in years was categorized as <20, 20–24, 25–29, 30–34, and ≥35; maternal education was classified as <12 years, high school graduate (12 years), and college (≥13 years). Plurality was grouped into singleton, twin, and higher order multiple (3+) categories. We categorized gestational age as preterm (20–36 weeks) and term (≥37 weeks), using the date of the mother's last menstrual period (LMP) to estimate gestational age. When the LMP was missing we substituted the clinical estimate of gestation. Birth weight was grouped as very low (<1500 grams), low (1500–2499 grams), and normal (≥2500 grams). Following the method described in Bol et al. (2006), a variable combining categories of gestational age and birth weight was created, and the six resultant combinations as shown in Table 2 were used in the analyses.

Infant age at death in days was categorized as 0, 1–6, 7–27, and 28–364. Whether an autopsy was performed is documented on the infant death certificate and was categorized as "Yes" or "No". Adequacy of prenatal care was measured using the Revised Graduated Index of Prenatal Care Utilization, which evaluates the timing and number of prenatal visits in relation to gestational age at delivery and obstetrical guidelines for prenatal care services (Alexander and Cornely, 1987).

Florida death certificate files contain an underlying (UCOD) and up to 20 contributing causes of death (CCOD). Descriptive statistics were used to identify birth defects (ICD, 10th edition [ICD-10], Q00.0–Q99.9 code range) not captured by the FBDR that were reported as the UCOD or a CCOD. Multivariable logistic regression was used to identify factors that affected the FBDR's ability to capture infants with birth defects reported on their death certificate. In all models, the dependent variable was the *failure* of the FBDR to capture an infant with a birth defect-related cause of death (COD). An infant was considered "captured" if they appeared in the FBDR, regardless of the concordance of the registry's defect with the birth defect-related COD. The final model was computed using backward elimination of covariates with a significance level of 0.05. A forward selection procedure resulted in the same final model.

Finally, to examine the potential impact of adding infant death certificates to the current case ascertainment method on birth prevalence (number of infants with a birth defect per 10,000 resident live births), rates using the FBDR's current case ascertainment sources were compared to recalculated rates that included cases identified exclusively by infant death certificates. All statistical tests were two-sided with α set at $p < 0.05$. Statistical analyses were conducted using SAS software version 9.2 (SAS Institute, Inc., Cary, NC).

RESULTS

From 1999 to 2006, there were 12,107 deaths among the 1,701,076 live births to Florida resident mothers, and a total of 2558 (21.1%) had a birth defect listed as the UCOD or a CCOD. Five infant death records listed birth defects that are not reportable to the FBDR based on case definitions, and these were excluded from the analyses. The FBDR captured 1871 (73.3%) of these infants using the current passive methodology involving linkage of various administrative health data sets. We examined the birth defects identified among the 682 infants not captured by the FBDR despite having a birth defect-related COD reported on the death certificate (Table 1). These included nonspecific defects such as unspecified congenital malformations, malformation of the coronary vessels, multiple congenital malformations, unspecified chromosomal anomalies, and normal variants such as hypoplasia/dysplasia of the lungs. Other commonly missed defects included defects with high lethality (e.g., anencephaly).

The distribution of infants with a birth defect-related COD by important maternal and perinatal factors is presented in Table 2. In unadjusted and multivariable analyses, factors most strongly associated with the FBDR's inability to capture infants with a birth defect-related COD were gestational age/birth weight, age at death, autopsy decision, plurality, adequacy of prenatal care, and maternal country of birth (Table 2). Infants with

Table 1
 Defects Not Captured by the Florida Birth Defects Registry That Were Reported as a Cause of
 Death on Infant Death Certificates, 1999-2006^a

ICD-10 codes	Defect	Total deaths	Not captured by FBDR	
			Total (%)	Died 1st day of life (% of those not captured)
Q89.9	Congenital malformation, unspecified	64	31 (48.4)	23 (74.2)
Q24.5	Malformation of coronary vessels	20	9 (45.0)	0 (0.0)
Q00.0, Q00.1	Anencephaly	123	54 (43.9)	47 (87.0)
Q89.7	Multiple congenital malformations, not elsewhere classified	137	58 (42.3)	44 (75.9)
Q03, Q03.1, Q03.8, Q03.9	Congenital hydrocephalus	60	22 (36.7)	8 (36.4)
Q99.9	Chromosomal abnormality, unspecified	46	16 (34.8)	11 (68.8)
Q60-Q60.6	Renal agenesis	129	44 (34.1)	37 (84.1)
Q01-Q01.9	Encephalocele	21	7 (33.3)	4 (57.1)
Q33.6	Hypoplasia and dysplasia of lung	401	123 (30.7)	68 (55.3)
Q77.1	Thanatophoric short stature	28	8 (28.6)	4 (50.0)
Q210	Ventricular septal defect	41	11 (26.8)	1 (9.1)
Q04.2	Holoprosencephaly	43	11 (25.6)	9 (81.81)
Q25.5	Atresia of pulmonary artery	38	9 (23.7)	2 (22.21)
Q61-Q61.9	Cystic kidney disease	115	25 (21.7)	12 (48.0)
Q25.1	Coarctation of aorta	37	8 (21.6)	1 (12.5)
Q24.9	Congenital malformation of heart, unspecified	323	68 (21.1)	21 (30.9)
Q91.0, Q91.1, Q91.2, Q91.3	Edwards syndrome (Trisomy 18)	225	46 (20.4)	26 (56.5)
Q79.2	Exomphalos	25	5 (20.0)	4 (80.0)
Q79.0, Q79.1	Diaphragmatic hernia	141	28 (19.9)	9 (32.1)
Q90-Q90.9	Down syndrome (Trisomy 21)	70	12 (17.1)	5 (41.7)
Q91.4, Q91.5, Q91.6, Q91.7	Patau syndrome (Trisomy 13)	114	19 (16.7)	8 (42.1)
Q04.3	Other reduction deformities of brain	32	5 (15.6)	1 (20.0)
Q23.4	Hypoplastic left heart syndrome	177	26 (14.7)	1 (3.8)
	Total number of deaths ^b	2553	682 (26.7)	341 (50.0)

^aInfant death certificates may indicate more than one cause of death.

^bUnduplicated count of infant deaths.

unknown gestational age or birth weight were at higher risk of being missed by the FBDR (OR, 2.40; 95% CI, 1.28–4.51), as were preterm/very low birth weight infants (OR, 1.88; 95% CI, 1.41–2.50), when compared to normal weight term infants. Infants dying in the first day of life were 3.4 times (95% CI: 2.60–4.38) more likely to be missed by the FBDR compared to infants dying between 28 and 364 days. The risk of being missed by the FBDR was approximately 1.6 times higher for infant deaths with autopsies (95% CI: 1.29–2.00). Compared to singleton infants, higher order multiples had the highest risk (OR, 11.02; 95% CI, 2.78–43.65) of being missed, followed by twins (OR, 2.98; 95% CI, 2.14–4.16). Independent of their mother’s race/ethnicity, infants whose mother’s birth place was outside the United States (OR, 1.40; 95% CI, 1.09–1.80) or unknown (OR, 2.53; 95% CI, 1.41–4.56) were significantly more likely to be missed by the FBDR compared to infants of mothers born in the U.S. Infants born to mothers with inadequate prenatal care were also more likely to be missed (OR, 1.86; 95% CI, 1.29–2.70), while similar though nonsignificant results were found for infants whose mothers received no prenatal care or with missing data for this variable. Factors significantly associated with the FBDR’s inability to capture infants with a birth defect-related COD in univariate analyses that were no longer significant after multivariable adjustment included maternal race/ethnicity and education.

Using a methodology that includes infant death certificates as a case ascertainment source, the FBDR would

identify an additional 86 cases per year, or four cases per 10,000 live births, from 1999 to 2006. The contribution of death certificates to overall birth defect rates, while small, varied significantly by specific type of birth defect. Rates of anencephaly were affected the most; increasing 0.35 cases per 10,000 live births from its currently reported rate of 0.44, an 80% rate of increase (Fig. 1). The addition of infant death certificates to the FBDR had a moderate impact on Edwards syndrome, Patau syndrome, hypoplastic left heart syndrome, and renal agenesis, which experienced a 25, 17, 11, and 10% increase in their rates, respectively. The rates of Down syndrome and hydrocephalus reported using the FBDR’s current ascertainment sources would be only nominally affected by using infant death certificates as an additional source.

DISCUSSION

Among all infant deaths in Florida during the study period, 21% had a birth defect listed as the UCOD or a CCOD, a proportion similar to recent national data (Mathews and MacDorman, 2008). The FBDR’s current case-finding strategy performed adequately in capturing infants reported as having died from a birth defect, capturing approximately 73%. However, its ability to capture infants varied considerably according to the defect of interest. Although the impact of adding infant death certificates to the FBDR’s case ascertainment methodology on the overall prevalence of birth defects is minor (0.58%),

Table 2
Odds Ratios and 95% Confidence Intervals for Failure to Identify an Infant Having Died from a Birth Defect by the Florida Birth Defects Registry^a

Characteristic	Total (N = 2553)	No (N = 682)	Yes (N = 1871)	Univariate models			Multivariable model ^b		
				Odds ratio	95% CI	p value	Odds ratio	95% CI	p value
Gestational age/birth weight						<0.001			<0.001
<37 wk/<1500 grams	628 (24.6)	265 (38.9)	363 (19.4)	3.18	2.50–4.06		1.88	1.41–2.50	
<37 wk/1500–2499 grams	484 (19.0)	124 (18.2)	360 (19.2)	1.50	1.14–1.98		1.04	0.77–1.41	
<37 wk/≥2500 grams	217 (8.5)	46 (6.7)	171 (9.1)	1.17	0.81–1.71		0.99	0.67–1.48	
≥37 wk/<1500 grams	53 (2.1)	14 (2.1)	39 (2.1)	1.57	0.83–2.96		1.09	0.55–2.17	
≥37 wk/1500–2499 grams	373 (14.6)	65 (9.5)	308 (16.5)	0.92	0.67–1.27		0.78	0.55–1.09	
≥37 wk/≥2500 grams	745 (29.2)	139 (20.4)	606 (32.4)	Ref.			Ref.		
Unknown	53 (2.1)	29 (4.3)	24 (1.3)	5.27	2.98–9.33		2.40	1.28–4.51	
Age at death (days)						<0.001			<0.001
0	734 (28.8)	341 (50.0)	393 (21.0)	4.14	3.28–5.23		3.38	2.60–4.38	
1–6	582 (22.8)	127 (18.6)	455 (24.3)	1.33	1.02–1.74		1.20	0.90–1.59	
7–27	429 (16.8)	74 (10.9)	355 (19.0)	1.00	0.73–1.36		0.97	0.70–1.34	
28–364	808 (31.6)	140 (20.5)	668 (35.7)	Ref.			Ref.		
Autopsy performed						0.006			<0.001
Yes	1933 (75.7)	490 (71.8)	1443 (77.1)	1.32	1.08–1.61		1.60	1.29–2.00	
No	620 (24.3)	192 (28.2)	428 (22.9)	Ref.			Ref.		
Plurality						<0.001			<0.001
Singleton (1)	2353 (92.2)	579 (84.9)	1774 (94.8)	Ref.			Ref.		
Twin (2)	188 (7.4)	94 (13.8)	94 (5.0)	3.06	2.27–4.14		2.98	2.14–4.16	
Higher order (3+)	12 (0.5)	9 (1.3)	3 (0.2)	9.19	2.48–34.05		11.02	2.78–43.65	
Prenatal Care Index						<0.001			0.010
Intensive	184 (7.2)	43 (6.3)	141 (7.5)	0.89	0.62–1.29		0.85	0.57–1.29	
Adequate	1093 (42.8)	278 (40.8)	815 (43.6)	Ref.			Ref.		
Intermediate	659 (25.8)	152 (22.3)	507 (27.1)	0.88	0.70–1.10		1.17	0.91–1.50	
Inadequate	181 (7.1)	61 (8.9)	120 (6.4)	1.49	1.06–2.09		1.86	1.29–2.70	
No prenatal care	91 (3.6)	30 (4.4)	61 (3.3)	1.44	0.91–2.28		1.60	0.97–2.64	
Unknown	345 (13.5)	118 (17.3)	227 (12.1)	1.52	1.17–1.98		1.15	0.85–1.56	
Maternal nativity						<0.001			<0.001
U.S.-born	1705 (66.8)	399 (58.5)	1306 (69.8)	Ref.			Ref.		
Foreign-born	785 (30.7)	246 (36.1)	539 (28.8)	1.49	1.24–1.80		1.40	1.09–1.80	
Unknown	63 (2.5)	37 (5.4)	26 (1.4)	4.66	2.79–7.79		2.53	1.41–4.56	
Maternal race/ethnicity						<0.001			
Non-Hispanic white	1087 (42.6)	252 (37.0)	835 (44.6)	Ref.					
Non-Hispanic black	766 (30.0)	193 (28.3)	573 (30.6)	1.12	0.90–1.38				
Hispanic	597 (23.4)	201 (29.5)	396 (21.2)	1.68	1.35–2.10				
Other/Unknown	103 (4.0)	36 (5.3)	67 (3.6)	1.78	1.16–2.73				
Maternal age (years)						0.460			
<20	365 (14.3)	110 (16.1)	255 (13.6)	1.23	0.92–1.64				
20–24	655 (25.7)	179 (26.2)	476 (25.4)	1.07	0.83–1.38				
25–29	597 (23.4)	155 (22.7)	442 (23.6)	Ref.					
30–34	441 (17.3)	108 (15.8)	333 (17.8)	0.93	0.70–1.23				
≥35	495 (19.4)	130 (19.1)	365 (19.5)	1.02	0.77–1.33				
Maternal education						<0.001			
Less than high school	686 (26.9)	191 (28.0)	495 (26.5)	1.19	0.95–1.50				
High school only	864 (33.8)	211 (30.9)	653 (34.9)	Ref.					
College	884 (34.6)	222 (32.6)	662 (35.4)	1.04	0.84–1.29				
Missing	119 (4.7)	58 (8.5)	61 (3.3)	2.94	1.99–4.35				
Infant sex						0.270			
Female	1213 (47.5)	302 (44.3)	911 (48.7)	Ref.					
Male	1328 (52.0)	368 (54.0)	960 (51.3)	1.16	0.97–1.38				
Unknown	12 (0.5)	12 (1.8)	0 (0.0)	N/A					

^aPercents may not add to 100% due to rounding.

^bThe final model was generated through backward elimination of variables if significance level was >0.05 while adjusting for mother's race/ethnicity.

CI, Confidence Interval; Ref., Reference.

the potential effect on defect-specific prevalence (e.g., anencephaly at 80.0%) appears compelling.

Although most birth defects surveillance programs utilize death certificates for programmatic and analytical purposes, these programs typically do not use death cer-

tificates as sources for case ascertainment. Death certificates are identified in the *Guidelines for Conducting Birth Defects Surveillance* (National Birth Defects Prevention Network, 2004) developed by the National Birth Defects Prevention Network only for the additional data con-

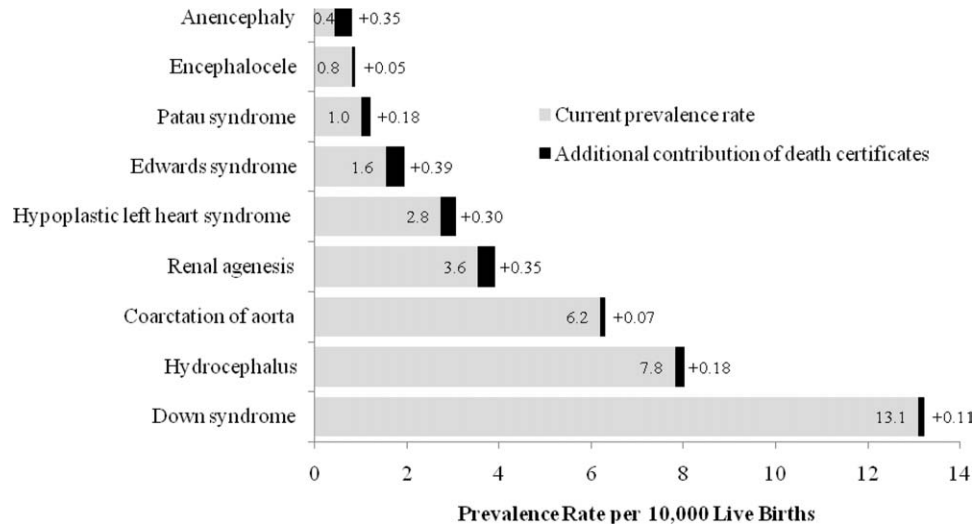


Figure 1. Current prevalence rates (per 10,000 live births) of selected defects and the rate increase experienced by adding infant death certificates as a case ascertainment source, Florida Birth Defects Registry, 1999–2006.

tained concerning mortality. For those programs that include birth defects identified among stillbirths, fetal death certificates are used in a similar manner.

A number of factors beyond the scope of this analysis may have influenced our results. Although most conditions within the ICD-10 rubric Q00–Q99 are reportable to the FBDR, some are not (e.g., patent ductus arteriosus and patent foramen ovale in preterm deliveries), and some birth defects may have diagnostic codes in the hospital discharge data that fall outside the ICD-9-CM rubric 740–759 (e.g., diaphragmatic hernia). Additionally, some conditions reported as a COD may not have been properly identified or diagnosed, especially in cases where infant demise occurs immediately after birth (e.g., anencephaly, holoprosencephaly). Likewise, some infant death certificates include nonspecific mentions of birth defects, which may represent suspected but not confirmed diagnoses (especially for chromosomal abnormalities and genetic conditions).

Completeness of ascertainment within the FBDR for infant deaths with a birth defect–related COD varied by defect. Some of the variation between anomalies may be explained by the FBDR’s inherent passive method of case ascertainment. The FBDR identifies birth defect cases through linking of administrative datasets (e.g., hospital discharge data). Infants diagnosed with highly lethal defects, such as anencephaly or hypoplasia and dysplasia of lung, and infants with multiple congenital anomalies have a low probability of surviving within the neonatal period (Nembhard et al., 2001). Therefore, an infant dying within minutes to hours of delivery may not be admitted to the hospital with the event generating no hospital discharge record for the FBDR to access. In the event such an infant is admitted to the hospital, the amount of information available for these infants is minimal when compared to infants diagnosed with defects that would require extensive follow-up and recurrent inpatient and outpatient hospitalizations during the first year of life (e.g., cleft lip/palate, spina bifida).

The FBDR’s ability to identify birth defect cases is highly dependent on the availability, completeness, and

nature of variables used for linkage across the multiple data sources. Among infant deaths with a birth defect as the UCOD or a CCOD, this study demonstrated that preterm infants born very low birth weight and infants dying the first day of life were at an increased risk of not being captured by the FBDR. In a study linking hospital discharge data and birth records, preterm and low birth weight infants, twins, and infants that died in a hospital were less likely to be matched (Ford et al., 2006). Similarly, Lui et al. found a higher proportion of low birth weight infants in unmatched birth and readmission hospital discharge records compared to matched records (Liu, 1999). Infants suffering demise shortly after birth may fall through the FBDR surveillance net if the infant is never formally admitted to the hospital, as there will be no hospital discharge summary available for review or record linkage. The FBDR presently has no mechanism to review autopsy reports.

A major limitation of this study is the absence of validation of the birth defect–related COD on death certificates in Florida. Reliable and accurate mortality data are dependent on a medical official’s ability to identify conditions and/or the chain of causes that may have contributed to death based on the medical information and knowledge available (Hoyert, 2003). High rates of errors and disagreement between original certifiers and evaluators’/autopsy reports have been shown in previous studies (Maudsley and Williams, 1996; Smith Sehdev and Hutchins, 2001; Ravakhah, 2006). In an attempt to explain the nature of these inaccuracies, Lu et al. (2001) asked physicians attending a continuing medical education course to complete the COD section on dummy death certificates of four case vignettes. Variations in death certifications were due to differences in interpreting the information rather than differences in knowledge of death certification, with the greatest source of variability accredited to choosing between an acute condition of a chronic disease and the chronic disease itself, and between competing prominent comorbidities. Additionally, rates of autopsy declined during the last century, and the most recent data show overall autopsy rates

around 8% and approximately 30% for infant deaths (Hoyert et al., 2007). Many deaths among infants with birth defects or neonatal intensive care unit stays are not autopsied because attending physicians believe they have sufficient clinical data from imaging studies and other tests to determine the COD.

Some infant deaths may have occurred to resident live births delivered outside Florida. Because the AHCA database contains hospital discharge information only for those events occurring in hospitals within Florida, birth defects for infants born to Florida residents in other states would be included only if the baby also had a hospital stay within the state of Florida during the first year of life. Infant death certificates were available due to interstate exchange agreements, but the FBDR would have missed these cases unless they received services in a hospital within Florida.

In a previous analysis, we identified maternal nativity as a protective factor for gastroschisis (Salemi et al., 2009); this may reflect underascertainment of birth defects among immigrant groups and contribute to the finding in this study that birth defects identified on infant death certificates were less frequently captured among non-U.S. born mothers. Because the FBDR relies on automated record linkage strategies for identification of cases, and social security numbers are a commonly used variable in the linkage algorithms, infants with birth defects whose records lack maternal social security numbers were more likely to be excluded from the registry.

As with all forms of public health surveillance, birth defect surveillance programs should utilize multiple sources for case ascertainment (Knowles et al., 2006). Although our study demonstrates that COD data from Florida infant death certificates could enhance the completeness of case ascertainment, the quality of these data for inclusion of diagnostic data remains unexplored. Some specific subgroups of infant deaths with birth defects mentioned as CODs clearly warrant focused attention, including those involving lethal defects, those for infants who do not survive at least 24 hours after delivery, and those with autopsy findings. An enhanced FBDR case ascertainment strategy should include active review of clinical records for these infants given the small number of cases that would require investigation on an annual basis.

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