



HOSPITAL REPORTING RATES OF ADVERSE PREGNANCY OUTCOMES IN 2021

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Theresa Sandidge, M.A.
Adverse Pregnancy Outcomes Reporting System

PURPOSE

The Illinois Department of Public Health's (IDPH) regulations require hospitals to report adverse pregnancy outcomes identified in Illinois residents during the newborn hospital stay. In 2021, these included infants with birth defects, prematurity (less than 31 weeks), serious congenital infections, intrauterine growth restriction, retinopathy of prematurity, those who had other serious conditions, and those who died during the newborn stay (Appendix 1). Rates of adverse pregnancy outcome reporting are calculated by the Adverse Pregnancy Outcomes Reporting System (APORS) to compare the number of adverse pregnancy outcomes each hospital reported to the number of live births at that hospital. The results are used to provide hospital-specific feedback to improve the completeness of case reporting.

METHODS

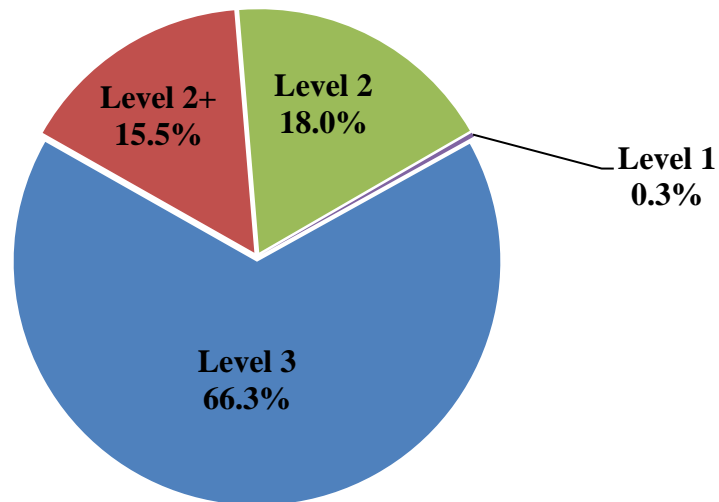
Three hospitals are excluded from this report because they provided services to newborns transferred from other hospitals, but deliveries did not take place at these locations. Data for 2021 shows that 126,725 births took place at the 101 included Illinois Perinatal Network hospitals. The number of births is based on the number of 2021 birth certificates filed by Illinois hospitals

with IDPH's Division of Vital Records. These 101 hospitals reported 9,391 cases to APORS either electronically or on paper forms provided by IDPH. Each hospital's case reporting rate was calculated as the percentage of reported cases among the total number of births at that hospital. The reporting rate for a hospital level was calculated as the number of cases reported by hospitals at that level divided by the total number of births at hospitals at that level.

RESULTS

Overall Case Reporting Rates. For 2021, case reporting rates among all hospitals ranged from 0.0% to 23.5% with the average being 7.4%, higher than the 2020 average of 6.5%. In Illinois, hospitals are certified at one of four levels, depending on the services they offer. Level 3 facilities care for patients requiring the most complex care and operate a neonatal intensive care unit (NICU). Level 2+ hospitals provide care to newborns at moderate risk and operate a special care nursery (SCN), but not a NICU. Level 2 hospitals provide care to newborns at moderate risk and have intermediate care nurseries, but do not operate a NICU or a SCN. Level 1 hospitals provide care to low-risk newborns and have only general care nurseries. Most APORS cases are reported by Level 3 facilities, with very few being born at Level 1 hospitals (Figure 1). Since mothers, whose babies have known or suspected adverse outcomes, are expected to deliver at Level 3 or 2+ hospitals to assure their babies receive the appropriate care, the analyses of case completeness rates were reported separately for each care level. If a baby was transferred between hospitals, the highest-level facility was responsible for reporting the case.

Figure 1. Percentage of APORS Cases Reported by Hospital Level, 2021



Hospital Case Reporting Rates. When examining average reporting rates by level of care, the 25 Level 3 hospitals had the highest reporting rate at 9.7% (Table 1). The average reporting rate for Level 2 and 2+ hospitals was 5.1%, while Level 1 facilities reported at an average of 2.7% (Tables 2, 3, and 4).

For each level of care, there were varied ranges of reporting rates among hospitals. Among Level 3 hospitals, the reporting rates by hospital ranged from 1.4% to 23.5%. Among Level 2+ hospitals, rates ranged from 1.9% to 9.8%, while among Level 2 facilities, the range was 1.0% to 15.2%. Among the Level 1 hospitals, rates ranged from 0.0% to 5.0%.

Table 1. Case Reporting Rates in 2021 for Level 3 Hospitals

Hospital	Cases	Rate	Hospital	Cases	Rate
3-1	112	9.5%	3-14	447	17.0%
3-2	326	11.0%	3-15	34	4.4%
3-3	107	6.0%	3-16	394	14.6%
3-4	224	12.8%	3-17	386	18.5%
3-5	38	2.4%	3-18	170	6.3%
3-6	351	13.0%	3-19	90	6.0%
3-7	451	10.8%	3-20	163	6.1%
3-8	262	8.1%	3-21	557	23.5%
3-9	72	2.8%	3-22	125	14.1%
3-10	196	6.9%	3-23	64	8.1%
3-11	211	6.2%	3-24	79	15.0%
3-12	268	7.8%	3-25	9	1.4%
3-13	1,086	8.9%	<i>Combined</i>	<i>6,222</i>	<i>9.7%</i>

Table 2. Case Reporting Rates in 2021 for Level 2+ Hospitals

Hospital	Cases	Rate	Hospital	Cases	Rate
2+-1	33	8.2%	2+-12	15	7.4%
2+-2	35	3.6%	2+-13	40	4.2%
2+-3	48	6.3%	2+-14	17	1.9%
2+-4	91	5.6%	2+-15	122	3.9%
2+-5	32	3.3%	2+-16	24	3.8%
2+-6	44	2.4%	2+-17	148	5.2%
2+-7	97	5.9%	2+-18	169	7.6%
2+-8	35	6.1%	2+-19	42	3.1%
2+-9	88	9.8%	2+-20	76	3.8%
2+-10	54	5.8%	2+-21	26	2.3%
2+-11	218	7.6%	<i>Combined</i>	<i>1,454</i>	<i>5.1%</i>

Table 3. Case Reporting Rates in 2021 for Level 2 Hospitals

Hospital	Cases	Rate	Hospital	Cases	Rate	Hospital	Cases	Rate
2-1	28	3.5%	2-18	12	2.4%	2-35	7	1.0%
2-2	17	3.8%	2-19	46	7.2%	2-36	4	1.3%
2-3	42	6.4%	2-20	20	6.3%	2-37	7	3.2%
2-4	94	6.6%	2-21	41	5.1%	2-38	19	2.4%
2-5	72	6.7%	2-22	47	7.3%	2-39	193	15.2%
2-6	28	5.9%	2-23	56	10.0%	2-40	5	2.4%
2-7	4	1.3%	2-24	38	5.2%	2-41	27	5.6%
2-8	84	9.7%	2-25	90	6.0%	2-42	35	3.0%
2-9	5	1.9%	2-26	21	8.1%	2-43	13	5.2%
2-10	14	2.5%	2-27	9	5.5%	2-44	11	7.4%
2-11	29	4.1%	2-28	18	2.9%	2-45	5	1.5%
2-12	10	1.2%	2-29	25	2.4%	2-46	9	4.3%
2-13	12	1.9%	2-30	42	2.2%	2-47	17	4.0%
2-14	38	4.7%	2-31	94	8.2%	2-48	103	7.5%
2-15	85	6.4%	2-32	21	2.6%	2-49	27	2.8%
2-16	25	9.4%	2-33	3	1.7%	<i>Combined</i>	<i>1,688</i>	<i>5.1%</i>
2-17	29	7.5%	2-34	7	2.7%			

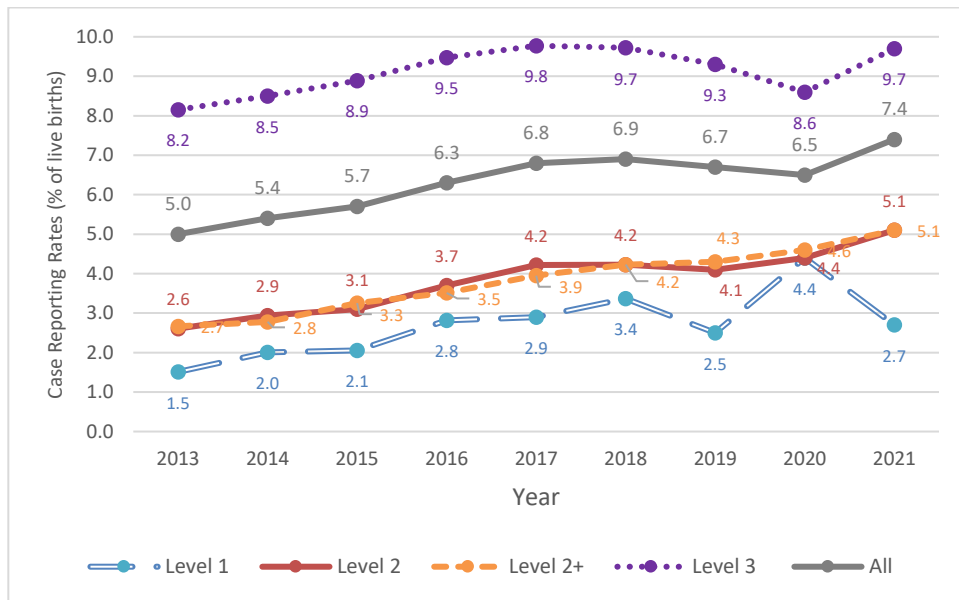
Table 4. Case Reporting Rates in 2021 for Level 1 Hospitals

Hospital	Cases	Rate	Hospital	Cases	Rate
1-1	0	0.0%	1-5	2	0.8%
1-2	8	5.0%	1-6	7	5.0%
1-3	3	1.5%	<i>Combined</i>	<i>27</i>	<i>2.7%</i>
1-4	7	4.1%			

DISCUSSION

In 2021, the overall reporting rate rebounded to a nine year high of 7.4% after having declined the previous two years (see Figure 2 below). As noted in a previous report there was not an obvious reason for the overall decreases in 2019 and 2020. Among hospital perinatal designation levels, combined reporting rates for Level 2 and 2+ hospitals also climbed to the highest level of the period in 2021 at 5.1%. In 2021, the combined Level 3 rate increased to 9.7%, after having declined for three years. The combined rate for Level 1 hospitals dropped to 2.7% after having increased in 2020 to 4.4%.

Figure 2. Case Reporting Rates by Hospital Level, Illinois, 2013-2021



APORS noted that the proportion of cases reported by Level 3 hospitals increased to 66.3% in 2021 from 65.1% in 2020, while the proportion of cases reported by Level 2+ hospitals decreased to 15.5% from 16.5% in 2020. The proportion of cases reported by Level 1 hospitals decreased to 0.3% in 2021 from 0.5% in 2020. The proportion of cases reported by Level 2 hospitals increased slightly in 2021 compared with 2020 (18.0 and 17.9 respectively). The changes in proportions of cases reported by level may have been influenced in part by the COVID-19 pandemic in which transfer protocols were altered to accommodate the influx of patients in hospitals. APORS expects to see additional changes in 2022 due to hospital closures as well as changes in APORS reporting requirements to include prenatal marijuana exposure, among several other conditions. As discussed in previous reports, variability persists in case reporting rates among hospitals providing the same level of care. These variations may be due to differences in populations served, transfer protocols between hospitals, and types of specialty care offered. It is also possible that not all cases are identified and reported to APORS, which may be more pronounced during times of staff turnover or shortages.

To that end, APORS strives to maximize case identification by providing training, education, and support to hospitals. Hospitals have access to a dedicated SharePoint site online where they can access manuals, training videos, webinar recordings, and other materials. APORS also provides prompt follow-up to hospital inquiries using a dedicated email address hospitals utilize to communicate with the APORS team. Finally, quality control reports are provided periodically to hospitals throughout the year to assist with assessment of timely and complete reporting. APORS will maintain these supports and develop new approaches as needed to further assist with case identification so that babies and families are provided the assistance needed after leaving the hospital.

Appendix 1
Conditions for APORS Hospital Nursery Reporting

Gestational age less than 31 completed weeks (based on physician's assessment)			
Multiple birth, triplets, or higher order			
Infant death (before discharge from the newborn stay) Expiration after showing signs of life, including breathing, heartbeat, pulsation of the umbilical cord, or definite movement of voluntary muscles. May have a zero APGAR score. A birth certificate should be issued.			
Prenatal drug exposure			
Diagnosis of a positive toxicology for any drug (except marijuana or drugs administered during labor and delivery)			
Signs of drug toxicity or withdrawal (in the infant)			
Children of mothers who admit to illicit drug use during pregnancy (except marijuana)			
Birth defect or congenital anomaly <i>(except as listed below)</i>			
<i>Congenital pigment anomalies</i> <i>(stork bites, Mongolian spots, etc.)</i>	<i>Peripheral pulmonic stenosis (PPS)</i>	<i>Skin tag</i>	
<i>Dacrostenosis</i>	<i>Persistent fetal circulation</i>	<i>Syndactyly</i>	
<i>Incomplete or redundant penile foreskin</i>	<i>Polydactyly</i>	<i>Tongue tie</i>	
<i>Isolated choroid plexus cyst</i>	<i>Preauricular sinus</i>	<i>Two-vessel cord</i>	
<i>Isolated simian crease</i>	<i>Prenatal diagnosis of hydronephrosis, caliectasis, or pelviectasis</i>	<i>Umbilical hernia</i>	
<i>Patent ductus arteriosus (PDA)</i>	<i>Sacral dimple with visualized base or post-natal imaging ruling out problem</i>	<i>Undescended testes</i>	
<i>Patent foramen ovale (PFO)</i>		<i>Vascular hamatomas (small or insignificant birth marks, port wine stains, strawberry nevi etc.)</i>	
Serious congenital infections <i>(Excludes: Hepatitis C or HIV exposure, neonatal candidiasis (thrush), conjunctivitis, dacrocystitis, infectivemastitis and omphalitis, and HIV)</i>			
Chlamydia	Hepatitis B (disease or prenatal exposure)	Rubella	
Confirmed septicemia (sepsis)	Herpes	Syphilis (disease or exposure to active disease)	
Cytomegalovirus	Listeriosis	Tetanus neonatorum	
Gonococcal conjunctivitis neonatorum	Meningitis		
Group B streptococcus	Necrotizing enterocolitis leading to surgery		
Endocrine, metabolic, or immune disorders			
Combined immunity deficiency	Hypothyroidism		
Blood disorder			
Coagulation defects	Constitutional aplastic anemia	Hereditary hemolytic anemia	Leukemia
Other conditions			
Bronchopulmonary dysplasia	Endocardial fibroelastosis	IVH grade III or IV	
Cerebral lipidoses	Erb's palsy	Neurofibromatosis	
Chorioretinitis	Fetal alcohol syndrome	Occlusion of cerebral arteries	
Conditions leading to ECMO	HIE leading to cooling treatment	Retinopathy of prematurity	
Conditions leading to > 72 hours on a ventilator	Intrauterine growth restriction leading to SGA	Strabismus	
		Seizures	