



RHODE ISLAND
BIRTH DEFECTS
DATA BOOKLET
2023



BIRTH DEFECTS SURVEILLANCE IN RHODE ISLAND

Birth defects cause about **one in five** infant deaths in Rhode Island and the United States.



Birth defects are structural abnormalities that affect the development of organs and tissues of an infant or child. These abnormalities may be identified during pregnancy, at birth, or following birth. Possible causes or contributing factors of birth defects include genetics, environmental pollutants, occupational hazards, diet, medications, and personal behaviors.

Early recognition of, and response to, birth defects often prevents more serious effects. A birth defects surveillance and information system is essential for the development of programs and policies that can reduce birth defects and infant mortality. At the Rhode Island Department of Health (RIDOH), the Rhode Island Birth Defects Program (RIBDP) maintains this surveillance system. The RIBDP identifies newborns with birth defects; assures that these children receive appropriate preventive, specialty, and other healthcare services; and monitors trends over time. All information collected by the RIBDP is confidential and is protected under State and federal privacy laws.

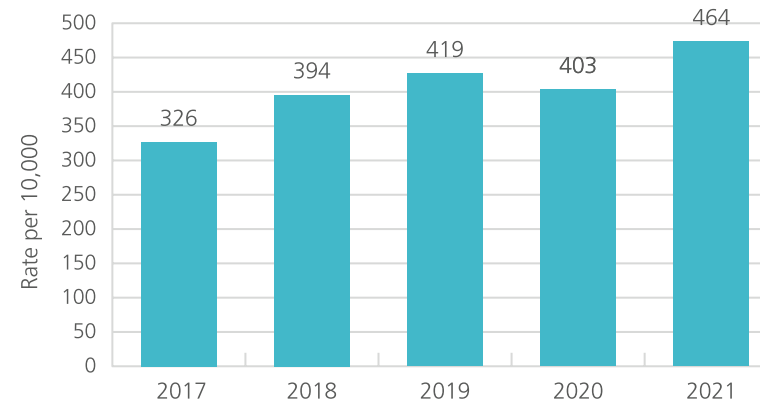
All healthcare professionals are mandated, by regulation, to report cases of birth defects identified among children up to age five, to the RIBDP. The reporting of birth defects cases helps the RIBDP assure that these children receive appropriate services and referrals on a timely basis and helps identify children who were not diagnosed with a birth defect at the time of birth. The RIBDP also works with all five birthing hospitals in Rhode Island to capture birth defects diagnosed at birth using hospital discharge data.

Birth defects cases include children born to Rhode Islanders, from birth to age five, and are identified using the 10th clinical modification of the International Classification of Diseases (ICD 10-CM) codes for diagnoses. The RIBDP confirms the accuracy of reported birth defects diagnoses through chart review and follows birth defects surveillance guidelines developed by the National Birth Defects Prevention Network (NBDPN).

Identification of Cases During the Newborn Period

From 2017 to 2021, the birth defects rate increased by 42%, from 326 per 10,000 live births in 2017 to 464 per 10,000 live births in 2021 (Figure 1).

FIGURE 1: Prevalence of Birth Defects Cases, Rhode Island, 2017-2021



Source: Rhode Island Birth Defects Program

The overall prevalence rate of birth defects from 2017 to 2021 was 401 cases per 10,000 live births (Table 1). Cardiovascular defects were the most common type of defect (175 per 10,000). Other common birth defects in Rhode Island include those related to genitourinary (153 per 10,000) and musculoskeletal (124 per 10,000) systems.

TABLE 1: Cases and Prevalence of Birth Defects by Body System, Rhode Island, 2017-2021

BIRTH DEFECT	COUNT	RATE (PER 10,000 LIVE BIRTHS)
Cardiovascular	910	175
Genitourinary	795	153
Musculoskeletal	642	124
Central Nervous System	183	35
Chromosomal	138	27
Gastrointestinal	120	23
Eye Ear Face Neck	94	18
Orofacial	63	12
Respiratory	37	7
All birth defects	2982	574
All birth defects cases	2079	401

Source: Rhode Island Birth Defects Program

Note: All birth defects represent all birth defects diagnosed in Rhode Island from 2017-2021. All birth defects cases represent the total number of Rhode Island babies born from 2017-2021 with at least one diagnosed birth defect. One case can have multiple birth defects.

Before or during early pregnancy, women should **avoid getting overheated**, treat fevers promptly, and take 400 micrograms (mcg) of folic acid every day to prevent neural tube defects.



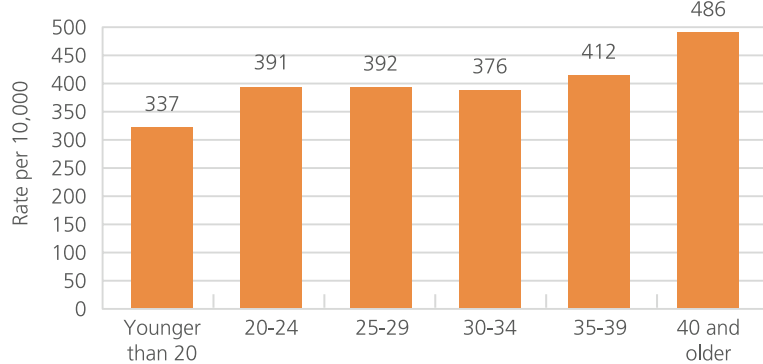
Before women become pregnant, they should maintain a healthy weight, quit smoking, and **talk to their doctor about medication they are taking** that may increase the risk of having a baby with congenital heart defects.



Maternal Risk Factors

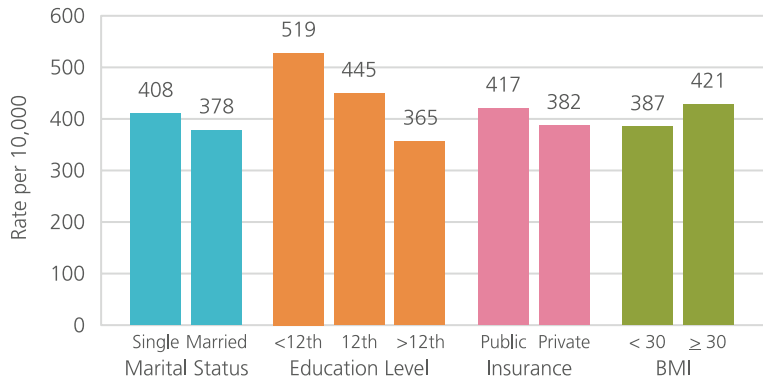
Babies born to women with certain maternal characteristics were at a higher risk of having a birth defect (Figures 2 and 3). From 2017 to 2021, women who were unmarried, had less than a high school education, were insured through public programs (such as Rite Care and Medicaid), were 40 or older, and had a pre-pregnancy body mass index (BMI) greater than or equal to 30 were more likely to have a baby born with a birth defect.

FIGURE 2: Prevalence of Birth Defects by Maternal Age Group, Rhode Island, 2017-2021



Source: Rhode Island Birth Defects Program

FIGURE 3: Prevalence of Birth Defects by Selected Maternal Characteristics Rhode Island, 2017-2021

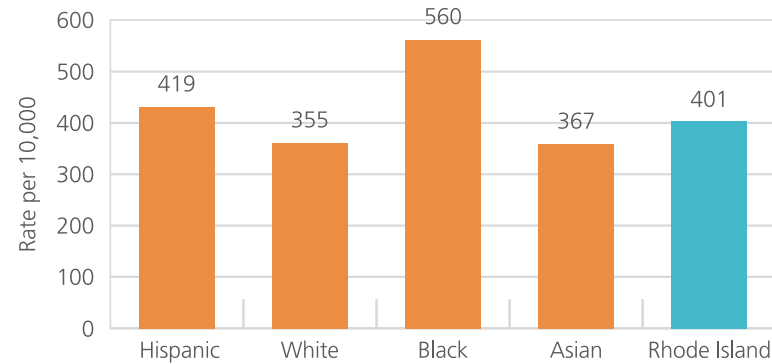


Source: Rhode Island Birth Defects Program

Racial/Ethnic and Geographic Disparities

Birth defects prevalence also varied by race/ethnicity (Figure 4) and by geography (Figure 5). During 2017-2021, non-Hispanic Blacks/African Americans and Hispanics had higher birth defects rates than non-Hispanic Whites and non-Hispanic Asians. The birth defects prevalence rate for non-Hispanic Asians and non-Hispanic Whites was lower than the Rhode Island prevalence rate for this timeframe.

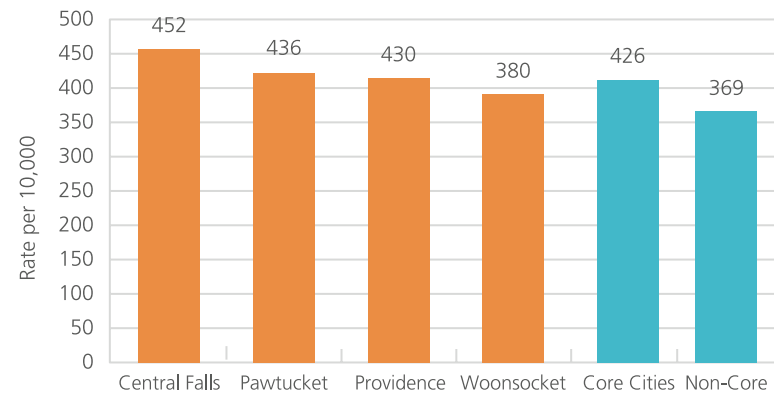
FIGURE 4: Prevalence of Birth Defects by Race/Ethnicity, Rhode Island, 2017-2021



Source: Rhode Island Birth Defects Program

Babies born to women who live in core cities where the poverty level is higher than 25% (Central Falls, Pawtucket, Providence, and Woonsocket) were about 1.2 times more likely to have a birth defect than babies born to residents living in the rest of the state (Figure 5).

FIGURE 5: Prevalence of Birth Defects by Selected Geographic Areas, Rhode Island, 2017-2021



Source: Rhode Island Birth Defects Program

Avoid getting infections while pregnant by practicing good hygiene; getting vaccinated; preventing insect bites; cooking meat and poultry to proper temperatures; and washing fruits and vegetables before eating them.



There is **no known safe amount, no safe time, and no safe type** of alcohol to drink during pregnancy.



Critical Congenital Heart Defects

Critical congenital heart defects (CCHD) are a range of 12 heart defects that can cause serious, life-threatening symptoms (see Table 2 for list). CCHD may require intervention and, commonly, surgery within the first days of a newborn’s life. These birth defects can involve abnormal heart rhythms and structural heart problems, including abnormal or absent chambers, holes in the heart, abnormal connections, and abnormal functioning. Babies who are not diagnosed or treated soon after birth are at high risk of death and disabilities later in life. To aid in early detection of birth defects, newborn pulse oximetry screening can help identify CCHD before symptoms appear. By identifying CCHD among newborns early, the appropriate care and treatment can be provided.

Based on a recommendation from the US Health and Human Services (HHS) Secretary’s Advisory Committee on Heritable Disorders in Newborns and Children (SACHDNC), CCHD was added to the newborn screening panel in Rhode Island in 2015, requiring birthing facilities to perform a pulse oximetry screening within 24 hours of the birth of every newborn in its care. The case counts of the 12 birth defects associated with CCHD from 2017 to 2021 are listed in Table 2.

TABLE 2: Cases of Critical Congenital Heart Defects, Rhode Island, 2017-2021

CCHD	CASES
Tetralogy of Fallot	18
Coarctation of aorta	17
Pulmonary valve atresia (with intact septum)	11
Double outlet right ventricle	10
Hypoplastic left heart syndrome	8
Transposition of great arteries	5
Total anomalous pulmonary venous return	4
Truncus arteriosus	2
Tricuspid valve atresia	2
Single ventricle	1
Interrupted aortic arch	1
Ebstein's anomaly	0
All critical congenital heart defects	79
All CCHD cases	72

Source: Rhode Island Birth Defects Program

Note: All critical congenital heart defects represent all critical congenital heart defects diagnosed in Rhode Island from 2017-2021. All CCHD cases represent the total number of Rhode Island babies born from 2017-2021 with at least one diagnosed CCHD. One case may have multiple CCHDs.

Service Assessments

A priority of the RIBDP is to assure that children with birth defects receive appropriate and timely preventive, specialty, and other healthcare services. The RIBDP, in collaboration with the Rhode Island Parent Information Network (RIPIN), employs a Certified Community Health Worker (CCHW) who conducts service assessments with families who have children up to age five with specific birth defects to determine whether these children have received appropriate referrals and services on a timely basis. The CCHW meets with families at pediatric and specialty care practices that serve children with birth defects or mails forms to those families who cannot be interviewed in a practice. Starting in 2021, the RIBDP added the option to complete an assessment via a secure online form. Follow-up service assessments are conducted annually to ensure continuity of referrals and services until the child is five years old.

Service assessments help the RIBDP determine what services and referrals were provided to children based on the national guidelines for specific conditions. The RIBDP has conducted more than 1,350 new and follow-up service assessments to date.

Service assessments are currently conducted with families of children who have Down syndrome, spina bifida, craniofacial defects, critical congenital heart defects, abdominal wall defects, hearing loss, and microcephaly or other central nervous system conditions.

The RIBDP recently evaluated educational, developmental, and family support service referrals reported by families of children with cleft lip, cleft palate, and cleft lip with cleft palate. From 2018 to 2022, 57 families completed an initial service assessment, and 45 of these families (79%) completed more than one assessment. Most assessments were completed in-person at a specialty clinic.

For family support services (Figure 6), the highest referral rates were for Medicaid assistance (67%) and the Visiting Nurses Association (VNA)/Home visiting (61%). There were fewer referrals to RIPIN (19%) and parent support groups (25%). Families were more likely to receive Medicaid assistance (97%) and parent support group services (93%) once referred. Of all families who received support services, families found Medicaid assistance (100%) and VNA/Home visiting (96%) most helpful.

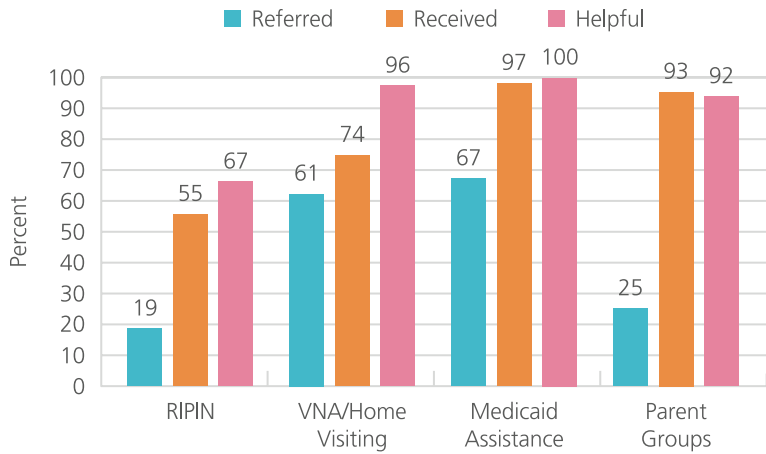
The use of **marijuana** and other drugs during pregnancy **can lead to preterm birth and birth defects.**



Smoking during pregnancy **increases the chances of premature birth, certain birth defects, and infant death.**



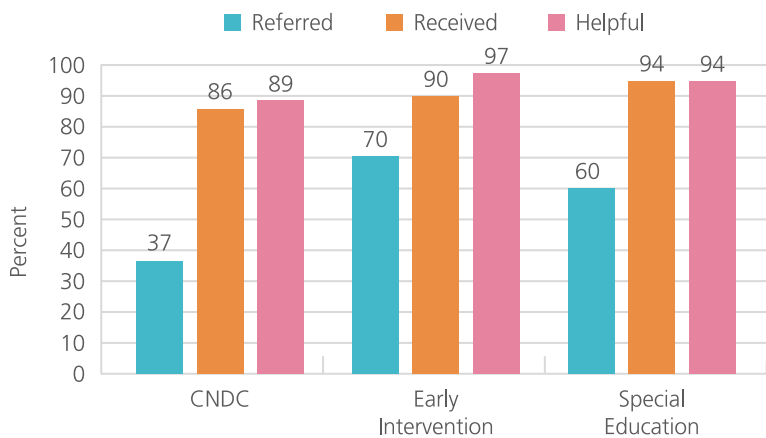
FIGURE 6: Family Support Service Referral and Receipt by Families of Children with Cleft Lip, Cleft Palate, and Cleft Lip with Cleft Palate, Rhode Island, 2018-2022



Source: Rhode Island Birth Defects Program

Families eligible for developmental and educational services were most likely to be referred to Early Intervention (70%). Families were least likely to receive referrals to the Children’s Neurodevelopmental Center (CNDC) at Hasbro Children’s Hospital (37%) (Figure 7). Those referred to Special Education were very likely to receive these services (94%). Overall, families who received Early Intervention (97%) and Special Education (94%) services found them helpful.

FIGURE 7: Educational and Developmental Support Service Referral and Receipt by Families of Children with Cleft Lip, Cleft Palate, and Cleft Lip with Cleft Palate, Rhode Island, 2018-2022



Source: Rhode Island Birth Defects Program

Although not all causes of birth defects are known, there are many things a woman can do before and during pregnancy to reduce the risk of having a baby with a birth defect. These include getting routine prenatal check-ups; taking folic acid supplements before and during pregnancy; avoiding tobacco, alcohol, and other harmful substances; eating a healthy diet; getting appropriate levels of exercise; preventing exposure to chemicals; and managing existing medical conditions (diabetes, epilepsy, and high blood pressure).

Data Dissemination and Partnerships

Sharing data and information on birth defects with healthcare professionals, policy makers, community organizations, families, and other stakeholders can increase awareness of birth defects and lead to program enhancements and policy development. The RIBDP uses a multi-pronged approach to data dissemination, including maintaining an up-to-date website; publishing studies in peer-reviewed journals; and presenting information at national meetings.

The RIBDP participates in collaborative studies with the National Birth Defects Prevention Network (NBDPN) to gain a better understanding of specific birth defects and their causes. The RIBDP also works in partnership with its Advisory Council, which includes representatives from Women & Infants Hospital, Hasbro Children’s Hospital, the March of Dimes Rhode Island/Southeastern Massachusetts market, and RIPIN. The Advisory Council provides guidance to the RIBDP in the development and implementation of its surveillance, prevention, service assurance, and information dissemination strategies.

National Awards

In August 2023, the RIBDP received the National Birth Defects Prevention Network’s State Leadership Award for outstanding leadership by a state program in the development or expansion of birth defects surveillance or prevention.

Proper management of chronic conditions, such as diabetes, can help prevent birth defects and other poor outcomes.



In the United States, a baby is born with a birth defect every **4.5 minutes**.



It is recommended that women take **400-800 micrograms (mcg) of folic acid** every day, starting at least one month before getting pregnant.





3 Capitol Hill, Providence, RI 02908
Health Information Line: 401-222-5960 / RI Relay 711
health.ri.gov



Daniel McKee
Governor
Dr. Utpala Bandy, MD, MPH
Interim Director of Health

For more information on birth defects and links to resources, please visit our website.
health.ri.gov/birthdefects