

# Newborn Screening for Critical Congenital Heart Disease (CCHD) IN WASHINGTON STATE

## HOSPITAL SUMMARY REPORT

JULY 2015 - DECEMBER 2018

### Washington State CCHD Mandate and Newborn Screening

In 2015, the Washington State Legislature mandated that birthing hospitals or health care providers attending births must screen all newborns for CCHD before discharge. They defined CCHD cases as infants born with a congenital heart defect requiring surgery within the first year of life. While screening is mandated and performed across the state, the data received by the Department of Health are CCHD diagnoses data. These data use a more time-limiting criteria, and define CCHD as all infants in Washington State requiring surgery within the first **month** of life.

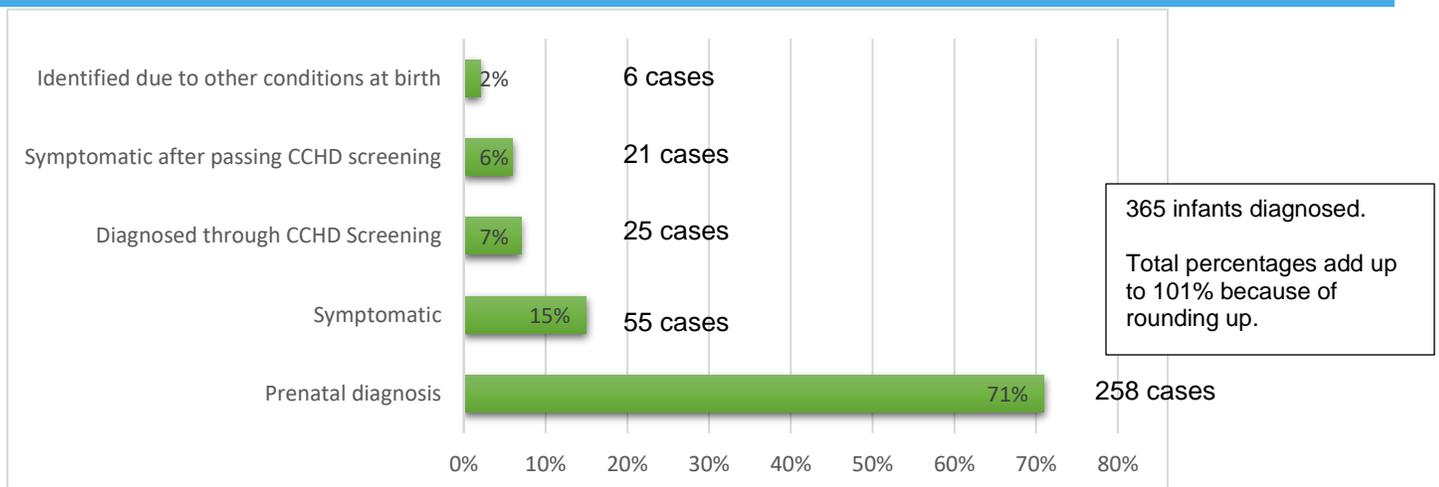
CCHD screening by pulse oximetry (pulse ox) is an effective tool to detect serious health problems in otherwise well-appearing newborns and ensures they receive appropriate follow-up care.

In the reporting period between July 2015 and December 2018, **365 infants diagnosed with CCHD** were born at hospitals (362), birth centers (2) or private homes (1) in Washington State. Of these infants, 25 cases were identified through CCHD screening. However, the majority of reported CCHD cases were identified through prenatal diagnosis.

### Washington State's CCHD Data Sources

Infants identified with CCHD are treated at one of three hospitals with neonatal cardiology surgical services in Washington State (Seattle Children's Hospital, Mary Bridge Children's Hospital, and Sacred Heart Medical Center & Children's Hospital). These hospitals provided their diagnoses data to the Screening and Genetics Unit at the state Department of Health for this report. More than half of all birthing hospitals in Washington State delivered one or more babies with CCHD.

## CCHD Findings for Washington State (July 2015-December 2018)



\*21 infants screened and yet not diagnosed with CCHD had conditions that pulse oximetry screening sometimes misses.

### When to screen

Health care providers should screen each infant no sooner than 24 hours but no later than 48 hours after birth.

### Why to screen

States with mandatory CCHD screening policies show a 33.4 percent decline in the death rate due to CCHD.

### Pulse Oximetry Screening for CCHD

The screening measures amount of oxygen in the baby's blood by gently wrapping sensors on the baby's hand and foot. Sensors detect light passing through the skin from one side of the sensor to the other. Pulse oximetry should be repeated **every hour** if retesting is necessary until three tests have not passed. Newborns not passing the screening have low blood oxygen levels and need further evaluation.

# CCHD Cases in Washington by Hospital of Birth

| # of cases | Hospital                                   |
|------------|--|
| 2          | Bremerton Naval Hospital                   |
| 1          | Capital Medical Center                     |
| 2          | Central Washington Hospital                |
| 5          | Deaconess Hospital                         |
| 19         | Evergreen Health                           |
| 2          | Grays Harbor                               |
| 5          | Harrison Memorial Hospital                 |
| 1          | Island Hospital Anacortes                  |
| 5          | Kadlec Regional Medical Center             |
| 2          | Kittitas Valley Healthcare                 |
| 10         | Madigan Army Medical Center                |
| 1          | MultiCare Auburn Medical Center            |
| 2          | MultiCare Good Samaritan Hospital          |
| 22         | Multicare Tacoma General Hospital          |
| 1          | NW Hosp. Medical Ctr UW Medicine           |
| 1          | Newport Hospital & Health Services         |
| 7          | Overlake Medical Center                    |
| 5          | Peace Health St. Joseph Medical Center     |
| 2          | Prosser Memorial Hospital Medical Center   |
| 5          | Providence Everett Regional Medical Center |
| 1          | Providence Holy Family Hospital            |

| # of cases | Hospital                                     |
|------------|--|
| 61         | Providence Sacred Heart Medical Center       |
| 3          | Providence St. Mary Medical Center           |
| 3          | Providence St. Peter Hospital                |
| 5          | Samaritan Healthcare                         |
| 3          | Skagit Valley Hospital                       |
| 2          | St. Francis Hospital                         |
| 5          | St. Joseph Hospital                          |
| 1          | Sunnyside Hospital                           |
| 2          | Swedish Medical Center – Ballard Campus      |
| 38         | Swedish Medical Center                       |
| 1          | Toppenish Hospital                           |
| 3          | Trios Health Hospital                        |
| 119        | University of Washington Medical Center      |
| 6          | Valley Medical Center                        |
| 3          | Virginia Mason Memorial Hospital             |
| 1          | Wenatchee Valley Hospital                    |
| 5          | Hospital name unknown (filled incompletely)  |
| 2          | Birth centers (Lakeside Birth & Salmonberry) |
| 1          | Home birth (Midwife)                         |

365 Washington State CCHD Cases

## CCHD Screening Table

### PASS

Pulse ox of 95% or more in right hand or foot and difference of 3% or less between the two.  
ACTION: Do not repeat for screening. Provide normal newborn care.

|     | RIGHT HAND |     |     |     |     |     |     |     |     |     | EITHER FOOT |     |     |     |     |     |     |     |     |     | <90 |     |     |     |
|-----|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 100 | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| 99  | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| 98  | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| 97  | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| 96  | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| 95  | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| 94  | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| 93  | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| 92  | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| 91  | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| 90  | 100        | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90          | <90 | 100 | 99  | 98  | 97  | 96  | 95  | 94  | 93  | 92  | 91  | 90  | <90 |
| <90 | <90        | <90 | <90 | <90 | <90 | <90 | <90 | <90 | <90 | <90 | <90         | <90 | <90 | <90 | <90 | <90 | <90 | <90 | <90 | <90 | <90 | <90 | <90 | <90 |

Adapted from the CCHD Screening Chart and Algorithm from the Virginia Department of Health.

Foot Application Sites



RH Application Sites



### RETEST

ACTION: Repeat pulse ox measurements in one hour. If the second test remains green, repeat again in one hour. If the third test is green, it is a FAIL. Report results to the medical provider.

### FAIL

Pulse ox of 89% or less in either the right hand or foot. ACTION: Do not repeat. Report results to the medical provider.



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