# Pediatric Quality Indicators 06 (PDI 06) Pediatric Heart Surgery Mortality Rate

**August 2017**

**Provider-Level Indicator**

**Type of Score: Rate**

**Prepared by:**

Agency for Healthcare Research and Quality

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## DESCRIPTION

In-hospital deaths per 1,000 pediatric heart surgery admissions among patients with congenital heart disease ages 17 years and younger. Excludes obstetric discharges; cases with transcatheter interventions as a single cardiac procedure, performed without bypass but with catheterization; cases with septal defect repairs as single cardiac procedures without bypass but with catheterization; cases with heart transplants; premature infants with patent ductus arteriosus (PDA) closure as the only cardiac procedure; age less than 30 days with PDA closure as only cardiac procedure; transfers to another hospital; cases with an unknown disposition; and neonates with birth weight less than 500 grams.

*[NOTE: The software provides the rate per hospital discharge. However, common practice reports the measure as per 1,000 discharges. The user must multiply the rate obtained from the software by 1,000 to report events per 1,000 hospital discharges.]*

**NUMERATOR**

Number of deaths (DISP=20) among cases meeting the inclusion and exclusion rules for the denominator.

## DENOMINATOR

Discharges, for patients ages 17 years and younger, with either
• any-listed ICD-9-CM procedure codes for congenital heart disease; or
• any-listed ICD-9-CM procedure codes for non-specific heart surgery and any-listed ICD-9-CM diagnosis codes for congenital heart disease.

**Congenital heart disease procedure codes:**

| | | | |
|---|---|---|---|
| 3500 | Closed Valvotomy Nos | 3503 | Closed Pulmon Valvotomy |
| 3501 | Closed Aortic Valvotomy | 3504 | Closed Tricusp Valvotomy |
| 3502 | Closed Mitral Valvotomy | 3505 | Endovas Repl Aortc Valve |
| 3506 | Trnsapcl Rep Aortc Valve | 3554 | Pros Rep Endocar Cushion |
| 3507 | Endovas Repl Pulm Valve | 3560 | Grft Repair Hrt Sept Nos |
| 3508 | Trnsapcl Repl Pulm Valve | 3561 | Graft Repair Atrial Def |
| 3510 | Open Valvuloplasty Nos | 3562 | Graft Repair Ventric Def |
| 3511 | Opn Aortic Valvuloplasty | 3563 | Grft Rep Endocar Cushion |
| 3512 | Opn Mitral Valvuloplasty | 3570 | Heart Septa Repair Nos |
| 3513 | Opn Pulmon Valvuloplasty | 3571 | Atria Septa Def Rep Nec |
| 3514 | Opn Tricus Valvuloplasty | 3572 | Ventr Septa Def Rep Nec |
| 3520 | Opn/oth Rep Hrt Vlv Nos | 3573 | Endocar Cushion Rep Nec |
| 3521 | Opn/oth Rep Aort Vlv-tis | 3581 | Tot Repair Tetral Fallot |
| 3522 | Opn/oth Rep Aortic Valve | 3582 | Total Repair Of Tapvc |
| 3523 | Opn/oth Rep Mtrl Vlv-tis | 3583 | Tot Rep Truncus Arterios |
| 3524 | Opn/oth Rep Mitral Valve | 3584 | Tot Cor Transpos Grt Ves |
| 3525 | Opn/oth Rep Pulm Vlv-tis | 3591 | Interat Ven Retrn Transp |
| 3526 | Opn/oth Repl Pul Valve | 3592 | Conduit Rt Vent-pul Art |
| 3527 | Opn/oth Rep Tcspd Vlv-ts | 3593 | Conduit Left Ventr-aorta |
| 3528 | Opn/oth Repl Tcspd Valve | 3594 | Conduit Artium-pulm Art |
| 3531 | Papillary Muscle Ops | 3595 | Heart Repair Revision |
| 3532 | Chordae Tendineae Ops | 3598 | Other Heart Septa Ops |
| 3533 | Annuloplasty | 3599 | Other Heart Valve Ops |
| 3534 | Infundibulectomy | 3699 | Heart Vessel Op Nec |
| 3535 | Trabecul Carneae Cord Op | 3733 | Exc/dest Hrt Lesion Open |
| 3539 | Tiss Adj To Valv Ops Nec | 3736 | Exc,destrct,exclus Laa |
| 3541 | Enlarge Existing Sep Def | 375 | Heart Transplantation |
| 3542 | Create Septal Defect | 3751 | Heart Transplantation |
| 3550 | Prosth Rep Hrt Septa Nos | 3752 | Imp Tot Int Bi Ht Rp Sys |
| 3551 | Pros Rep Atrial Def-opn | 390 | Systemic-pulm Art Shunt |
| 3552 | Pros Repair Atria Def-cl | 3921 | Caval-pulmon Art Anastom |
| 3553 | Pros Rep Ventric Def-opn | | |

**Non-specific heart surgery procedure codes:**

| | | | |
|---|---|---|---|
| 3834 | Aorta Resection & Anast | 3885 | Occlude Thoracic Ves Nec |
| 3835 | Thor Vessel Resect/anast | 3949 | Vasc Proc Revision Nec |
| 3844 | Resect Abdm Aorta W Repl | 3956 | Repair Vess W Tis Patch |

| 3845 | Resect Thorac Ves W Repl | 3957 | Rep Vess W Synth Patch |
| 3864 | Excision Of Aorta | 3958 | Repair Vess W Patch Nos |
| 3865 | Thoracic Vessel Excision | 3959 | Repair Of Vessel Nec |
| 3884 | Occlude Aorta Nec | | |

**Congenital heart disease diagnosis codes:**

| 7450 | Common Truncus | 74569 | Endocard Cushion Def Nec |
| 74510 | Compl Transpos Great Ves | 7457 | Cor Biloculare |
| 74511 | Double Outlet Rt Ventric | 7458 | Septal Closure Anom Nec |
| 74512 | Correct Transpos Grt Ves | 7459 | Septal Closure Anom Nos |
| 74519 | Transpos Great Vess Nec | 74600 | Pulmonary Valve Anom Nos |
| 7452 | Tetralogy Of Fallot | 74601 | Cong Pulmon Valv Atresia |
| 7453 | Common Ventricle | 74602 | Cong Pulmon Valve Stenos |
| 7454 | Ventricular Sept Defect | 74609 | Pulmonary Valve Anom Nec |
| 7455 | Secundum Atrial Sept Def | 7461 | Cong Tricusp Atres/sten |
| 74560 | Endocard Cushion Def Nos | 7462 | Ebstein's Anomaly |
| 74561 | Ostium Primum Defect | 7463 | Cong Aorta Valv Stenosis |
| 7464 | Cong Aorta Valv Insuffic | 74711 | Interrupt Of Aortic Arch |
| 7465 | Congen Mitral Stenosis | 74720 | Cong Anom Of Aorta Nos |
| 7466 | Cong Mitral Insufficienc | 74721 | Anomalies Of Aortic Arch |
| 7467 | Hypoplas Left Heart Synd | 74722 | Aortic Atresia/stenosis |
| 74681 | Cong Subaortic Stenosis | 74729 | Cong Anom Of Aorta Nec |
| 74682 | Cor Triatriatum | *7473* | Pulmonary Artery Anom |
| 74683 | Infundib Pulmon Stenosis | 74731 | Pulmon Art Coarct/atres |
| 74684 | Obstruct Heart Anom Nec | 74732 | Pulmonary Av Malformatn |
| 74685 | Coronary Artery Anomaly | 74739 | Oth Anom Pul Artery/circ |
| 74687 | Malposition Of Heart | 74740 | Great Vein Anomaly Nos |
| 74689 | Cong Heart Anomaly Nec | 74741 | Tot Anom Pulm Ven Connec |
| 7469 | Cong Heart Anomaly Nos | 74742 | Part Anom Pulm Ven Conn |
| 7470 | Patent Ductus Arteriosus | 74749 | Great Vein Anomaly Nec |
| 74710 | Coarctation Of Aorta | | |

**DENOMINATOR EXCLUSIONS**

Exclude cases:

• with any-listed ICD-9-CM procedure codes for closed heart valvotomy *(3AP)* as the only congenital heart disease procedure and any-listed ICD-9-CM procedure codes for catheterization *(6P )* without any-listed ICD-9-CM procedure codes for extracorporeal circulation *(5P)*

• with any-listed ICD-9-CM procedure codes for atrial septal enlargement *(3BP)* as the only congenital heart disease procedure and any-listed ICD-9-CM procedure codes for catheterization *(6P)* without any-listed ICD-9-CM procedure codes for extracorporeal circulation *(5P)*

• with any-listed ICD-9-CM procedure codes for atrial septal defect repair *(3CP)* as the only congenital heart disease procedure and any-listed ICD-9-CM procedure codes for catheterization *(6P)* without any-listed ICD-9-CM procedure codes for extracorporeal circulation *(5P)*

• with any-listed ICD-9-CM procedure codes for ventricular septal defect repair *(3DP)* as the only congenital heart disease procedure and any-listed ICD-9-CM procedure codes for catheterization *(6P)* without any-listed ICD-9-CM procedure codes for extracorporeal circulation *(5P)*

• with any-listed ICD-9-CM procedure codes for other surgical occlusion *(3FP)* as the only congenital heart disease procedure and any-listed ICD-9-CM procedure codes for catheterization *(6P)* without any-listed ICD-9-CM procedure codes for extracorporeal circulation *(5P)*

• with patent ductus arteriosus (PDA) and any-listed ICD-9-CM procedure codes for catheterization *(6P)* without any-listed ICD-9-CM procedure codes for extracorporeal circulation *(5P)*

• with any-listed ICD-9-CM procedure codes for atrial septal defect repair and enlargement *(4P)* as the only congenital heart disease procedure without any-listed ICD-9-CM procedure codes for extracorporeal circulation *(5P)*

• with any-listed ICD-9-CM procedure codes for heart transplant *(7P)*

• with any-listed ICD-9-CM diagnosis codes for premature infant *(4D)* with PDA†

• with any-listed ICD-9-CM diagnosis codes for atrial septal defect or ventricular septal defect *(5D)* and PDA†

• age less than or equal to 30 days with PDA†

• transferring to another short-term hospital (DISP=2)

• neonates with birth weight less than 500 grams (Birth Weight Category 1)

• MDC 14 (pregnancy, childbirth and pueperium)

• with missing discharge disposition (DISP=missing), gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing) or principal diagnosis (DX1=missing)

† PDA is defined as any diagnosis of PDA *(3D)* where the only congenital heart diagnoses *(2D)* consists of PDA (3D) and ventricular septal defect *(5D)* with any procedure code of occlusion of a thoracic vessel *(3EP)* as the only congenital heart disease procedure.

*See Pediatric Quality Indicators Appendices:*

        *Appendix I - Definitions of Neonate, Newborn, Normal Newborn, and Outborn*
        *Appendix L - Low Birth Weight Categories*

**Closed heart valvotomy procedure codes (3AP):**

| 3500 | Closed Valvotomy Nos | 3503 | Closed Pulmon Valvotomy |
|------|----------------------|------|--------------------------|
| 3501 | Closed Aortic Valvotomy | 3504 | Closed Tricusp Valvotomy |
| 3502 | Closed Mitral Valvotomy | | |

**Atrial septal enlargement procedure codes (3BP):**

| 3541 | Enlarge Existing Sep Def | 3542 | Create Septal Defect |
|------|--------------------------|------|----------------------|

**Atrial septal defect repair procedure codes (3CP):**

| 3551 | Pros Rep Atrial Def-opn | 3571 | Atria Septa Def Rep Nec |
|------|-------------------------|------|--------------------------|

**PDA closure diagnosis code (3D):**

| 7470 | Patent Ductus Arteriosus |
|------|--------------------------|

**Ventricular septal defect repair procedure codes (3DP):**

| 3553 | Pros Rep Ventric Def-opn | 3572 | Ventr Septa Def Rep Nec |
|------|--------------------------|------|--------------------------|

**Occlusion of thoracic vessel procedure codes (3EP):**

| 3885 | Occlude Thoracic Ves Nec |
|------|--------------------------|

**Other surgical occlusion procedure codes (3FP):**

| 3884 | Occlude Aorta Nec | 3959 | Repair Of Vessel Nec |
|------|-------------------|------|----------------------|
| 3885 | Occlude Thoracic Ves Nec | | |

**Premature infant diagnosis codes (4D):**

| 76500 | Extreme Immatur Wtnos | 76510 | Preterm Infant Nec Wtnos |
|-------|------------------------|-------|---------------------------|
| 76501 | Extreme Immatur <500g | 76511 | Preterm Nec <500g |
| 76502 | Extreme Immatur 500-749g | 76512 | Preterm Nec 500-749g |
| 76503 | Extreme Immatur 750-999g | 76513 | Preterm Nec 750-999g |
| 76504 | Extreme Immat 1000-1249g | 76514 | Preterm Nec 1000-1249g |
| 76505 | Extreme Immat 1250-1499g | 76515 | Preterm Nec 1250-1499g |
| 76506 | Extreme Immat 1500-1749g | 76516 | Preterm Nec 1500-1749g |
| 76507 | Extreme Immat 1750-1999g | 76517 | Preterm Nec 1750-1999g |
| 76508 | Extreme Immat 2000-2499g | 76518 | Preterm Nec 2000-2499g |

| 76509 | Extreme Immat 2500+g | 76519 | Preterm Nec 2500+g |
|---|---|---|---|

## Atrial septal defect repair and enlargement procedure codes (4P):

| 3541 | Enlarge Existing Sep Def | 3552 | Pros Repair Atria Def-cl |
|---|---|---|---|

## Extracorporeal circulation procedure code (5P):

| 7454 | Ventricular Sept Defect | 7455 | Secundum Atrial Sept Def |
|---|---|---|---|

## Catheterization procedure codes (6P):

| 3721 | Rt Heart Cardiac Cath | 8852 | Rt Heart Angiocardiogram |
|---|---|---|---|
| 3722 | Left Heart Cardiac Cath | 8853 | Lt Heart Angiocardiogram |
| 3723 | Rt/left Heart Card Cath | 8854 | Rt & Lt Heart Angiocard |
| 8842 | Contrast Aortogram | 8855 | Coronar Arteriogr-1 Cath |
| 8843 | Contr Pulmon Arteriogram | 8856 | Coronar Arteriogr-2 Cath |
| 8844 | Contr Thor Arteriogr Nec | 8857 | Coronary Arteriogram Nec |
| 8850 | Angiocardiography Nos | 8858 | Negatve-contr Cardiogram |
| 8851 | Vena Cav Angiocardiogram | | |

## Heart transplant procedure codes (7P):

| 375 | Heart Transplantation | 3752 | Imp Tot Int Bi Ht Rp Sys |
|---|---|---|---|
| 3751 | Heart Transplantation | | |