**Inclusion/Exclusion criteria and pathway for AVSD patients**

# Identify AVSD group

## Step 1: Include patients who had evidence of AVSD

### Diagnostic code evidence of primary diagnosis AVSD

Diagnostic code evidence for AVSD that meet at least one of the following criteria:

#### Patients who have a diagnosis code for AVSD

##### Table A Diagnosis codes for AVSD as listed for Top rank 10 AVSD

|  |
| --- |
| 050601. Common atrium (virtual absence of atrial septum) |
| 060501. AVSD AV valvar abnormality |
| 060506. AVSD AV valvar regurgitation |
| 060600. Atrioventricular septal defect |
| 060601. AVSD: isolated atrial component (primum ASD) (partial) |
| 060608. AVSD: isolated ventricular component |
| 060609. AVSD: atrial & ventricular components with common AV orifice (complete) |
| 060610. AVSD: atrial & (restrictive) ventricular components + separate AV valves |
| 060598. Deficient mural-lateral leaflet of left ventricular component of common atrioventricular valve (left atrioventricular vale) |
| 050603.Common atrium with common atrioventricular junction. |
| 060514.Atypical common atrioventricular valve. |
| 060525. Double orifice of left ventricular component of common atrioventricular valve (left atrioventricular valve). |
| 060560.Common atrioventricular valvar regurgitation. |
| 060571.Atypical right ventricular component of common atrioventricular valve (right atrioventricular valve). |
| 060572.Atypical left ventricular component of common atrioventricular valve (left atrioventricular valve). |
| 060705. Atrioventricular septal defect (AVSD) with ventricular imbalance with dominant right ventricle and hypoplastic left ventricle. |
| 060706. Atrioventricular septal defect (AVSD) with ventricular imbalance with dominant left ventricle and hypoplastic right ventricle. |
| 060727. Atrioventricular septal defect (AVSD) with balanced ventricles. |
| 060728.Common atrioventricular junction with spontaneous fibrous closure of atrioventricular septal defect (AVSD). |
| 060736. Common atrioventricular valve with unbalanced commitment of valve to ventricles. |
| 060737.Common atrioventricular valve with unbalanced commitment of valve to right ventricle. |
| 060738.Common atrioventricular valve with unbalanced commitment of valve to left ventricle. |

#### Patients who have a code that provides some evidence or indirect evidence for the diagnosis of AVSD

##### Table B Diagnosis codes suggestive of AVSD

|  |
| --- |
| 060598: Deficient mural leaflet of left ventricular component of common atrioventricular valve (left atrioventricular valve), |
| 151600: Postprocedural atrioventricular septal defect complication, |
| 151602: Residual ventricular component of atrioventricular septal defect, |
| 103460: Atrioventricular valvar abnormality in atrioventricular septal defect (AVSD): acquired, |
| 103444: Left atrioventricular valvar regurgitation: acquired, |
| 151302: Residual common atrioventricular valvar regurgitation, |
| 151400: Postprocedural right atrioventricular valvar complication, |
| 151500: Postprocedural left atrioventricular valvar complication, |

#### Evidence for a diagnosis of tetralogy AVSD

Patients who have diagnostic code: 010120. AV septal defect and Tetralogy of Fallot

Or

Patients who have a code from [Table A](#_Table_A_Diagnosis) and a tetralogy of fallot code:

* 010117. Double outlet right ventricle: Fallot type (subaortic or doubly committed VSD & pulmonary stenosis)
* 010101. Tetralogy of Fallot

#### Evidence of unbalanced AVSD

Patients who have diagnostic code 060726. AVSD with ventricular imbalance

Or

Patients who have a code from [Table A](#_Table_A_Diagnosis) and a ventricular hypoplasia code:

* 070700. Left ventricular hypoplasia
* 070200. Right ventricular hypoplasia

### Procedure based evidence of AVSD

Any patients who are not picked up by diagnosis but who have procedure evidence of AVSD to be identified as follows:

#### Identify patients who have at least one of the following procedure codes from Table C

##### Table C Procedure codes linked to AVSD

|  |
| --- |
| 120400. Atrioventricular septal defect procedure |
| 120401. Atrioventricular septal defect (AVSD): partial (primum ASD) repair |
| 120501. Atrioventricular septal defect (AVSD): complete (common valve orifice) repair |
| 120510. Atrioventricular septal defect (AVSD): 'intermediate' repair |
| 120409. Atrioventricular septal defect (AVSD): partial with isolated ventricular component (VSD) repair |
| 124801. Common atrioventricular valvar leaflet (valvoplasty) procedure |
| 120420. Atrioventricular septal defect (AVSD): right atrioventricular valvar procedure |
| 120440.Atrioventricular septal defect (AVSD): left atrioventricular valvar procedure |
| 120445. Atrioventricular septal defect (AVSD): left atrioventricular valvar replacement |
| 120433. Common atrioventricular valve repair converted to atrioventricular valvar replacement |
| 120418. Common atrioventricular valve replacement |
| 124802. Atrioventricular septal defect (AVSD): suturing together superior + inferior bridging leaflets to left ventricular side of septum ('cleft') |
| 120511. Atrioventricular septal defect (AVSD) & Tetralogy of Fallot repair |
| 120571.Atrioventricular septal defect (AVSD) repair with direct ventricular component closure & patch to atrial component (Nunn/Wilson). |

## Step 2: Exclude patients who had more complex CHD

### Exclude patients who have a code listed in Table D, as well as those identified as having HLHS, FUH, TGA or pulmonary atresia according to the CHANPION rules, which cannot be adequately captured by Table D alone.

As this is a diagnosis-based analysis, we mainly use diagnostic exclusion codes with a small number of key procedure exclusion codes. This is because the procedures undertaken in the patients are very variable and we aim to be inclusive to variations in management pathway.

#### Table D AVSD Exclusions Codes (codes that are indicative of more complex CHD condition)

|  |
| --- |
| 010109. Hypoplastic left heart syndrome |
| 060201. Mitral atresia |
| 091503. Aortic atresia |
| 010114. Double inlet AV connection (double inlet ventricle) |
| 010122. Functionally univentricular heart |
| 010124. Double outlet right ventricle: with intact ventricular septum |
| 010403. Double inlet RV |
| 010404. Double inlet LV |
| 020305. Solitary ventricle of indeterminate morphology |
| 060101. Tricuspid atresia |
| 070841. Functionally univentricular heart |
| 070842. Functionally univentricular heart |
| 090101. Common arterial trunk (truncus arteriosus) |
| 090200. Truncal valvar abnormality |
| 090203. Truncal valvar regurgitation |
| 010118. Double outlet right ventricle: transposition type (subpulmonary VSD) |
| 010501. Discordant VA connections (TGA) |
| 010102. Transposition of great arteries (concordant AV & discordant VA connections) & IVS |
| 010107. Pulmonary atresia + intact ventricular septum |
| 010106. Pulmonary atresia + VSD (including Fallot type) |
| 010125. Pulmonary atresia + VSD + systemic-to-pulmonary collateral artery(ies) (MAPCA(s)) |
| 090511. Pulmonary atresia |
| 090512. Pulmonary atresia: imperforate valve |
| 090726. Solitary arterial trunk (absent intrapericardial pulmonary arteries) |
| 090801. Major systemic-to-pulmonary collateral artery(ies) (MAPCA(s)) |
| 092025. Systemic-to-pulmonary collateral arter(ies) (MAPCA(s)) stenosis(es) |
| 010103. Congenitally corrected transposition of great arteries (discordant AV & VA connections) |
| 010116. Partially anomalous pulmonary venous connections: Scimitar syndrome |
| 010133. Shone's syndrome: left heart obstruction at multiple sites, |
| 010503. Double outlet left ventricle |
| 050201. Cor triatriatum (divided left atrium) |
| 090401. Aortopulmonary window |
| 090525. Absent pulmonary valve syndrome: Fallot-type |
| 091600. Supravalvar aortic stenosis |
| 094101. Anomalous origin of coronary artery from pulmonary artery |
| 060134. Ebstein's malformation of tricuspid valve |
| 091506. Aortic valvar atresia. |
| 060202. Mitral atresia with imperforate mitral valve. |
| 060226. Mitral atresia with absent valvar annulus (connection-junction). |
| 010405.Double inlet to solitary ventricle of indeterminate morphology. |
| 020303.Crisscross heart (twisted atrioventricular connections). |
| 060311.Congenital anomaly of right-sided atrioventricular valve in double inlet ventricle. |
| 060411.Congenital anomaly of left-sided atrioventricular valve in double inlet ventricle. |
| 090111. Common arterial trunk (truncus arteriosus) with aortic dominance and one pulmonary artery absent from trunk. isolated pulmonary artery. |
| 090112. Common arterial trunk (truncus arteriosus) with pulmonary dominance and aortic arch obstruction. |
| 090114. Common arterial trunk (truncus arteriosus) with aortic dominance and both pulmonary arteries arising from trunk. |
| 090115. Common arterial trunk (truncus arteriosus) with aortic dominance (no aortic arch obstruction). |
| 090118. Common arterial trunk (truncus arteriosus) with pulmonary dominance and interrupted aortic arch. |
| 090119. Common arterial trunk (truncus arteriosus) with pulmonary dominance and aortic coarctation. |
| 090201.Dysplasia of truncal valve. |
| 090218.Congenital truncal valvar stenosis. |
| 090219.Congenital truncal valvar regurgitation. |
| 010110.Transposition of the great arteries with concordant atrioventricular connections and ventricular septal defect. |
| 092932. Interrupted aortic arch distal to subclavian artery. type A. |
| 092933. Interrupted aortic arch between subclavian & common carotid arteries. type B. |
| 092934. Interrupted aortic arch between carotid arteries. type C. |
| 090908. Pulmonary artery from ascending aorta (hemitruncus) |
| 091010. Discontinuous (non-confluent) pulmonary arteries |
| 010126.Tetralogy of Fallot with pulmonary atresia. |
| 010157.Tetralogy of Fallot with pulmonary atresia and systemic-to-pulmonary collateral artery(ies) (MAPCA(s)). |
| 090516.Congenital pulmonary atresia. |
| 090705. Absent or atretic pulmonary trunk (main pulmonary artery). |
| 090902.Right pulmonary artery from arterial duct. |
| 090903.Right pulmonary artery from ascending aorta. |
| 090904.Left pulmonary artery from arterial duct. |
| 090905.Left pulmonary artery from ascending aorta. |
| 090911. Pulmonary artery from arterial duct. |
| 091030.Congenitally discontinuous. non-confluent right and left pulmonary arteries. |
| 091075.Absent or atretic right pulmonary artery. |
| 091077.Absent or atretic left pulmonary artery. |
| 090407.Congenital aortopulmonary window. |
| 091618. Congenital supravalvar aortic stenosis. |
| 093134.Vascular ring of left aortic arch and right arterial duct or ligament. |
| 093135.Vascular ring of right aortic arch and left arterial duct or ligament. |
| 094103. Anomalous origin of left coronary artery from pulmonary artery (ALCAPA). |
| 094221.Anomalous aortic origin of coronary artery with ventriculo-arterial concordance. |
| 060104. Tricuspid annular hypoplasia. |
| 060105. Overriding tricuspid valve. |
| 060107. Congenital tricuspid valvar stenosis. |
| 060111. Congenital anomaly of tricuspid valve. |
| 060126. Tricuspid atresia with absent valvar annulus (connection-junction). |
| 091501 Aortic valvar stenosis |
| 030703 spleen absent |
| 010306 Abnormal atrial arrangement |
| 040805 Totally anomalous pulmonary venous connection (TAPVC) |
| 030104 Right isomerism |
| 030105 left isomerism |
| 020102 Dextrocardia |
| Procedure codes that have a special link to this diagnosis and therefore can lead to patients being misallocated |
| 124600. AV valvar procedure in double inlet ventricle. |
| 120000. Totally anomalous pulmonary venous connection repair |

## Step 3 Identify AVSD Pathway

Consider patients selected in [step 1](#_Step_1:_Diagnostic) and [step 2](#_Step_2:_Procedure) and then assign pathway type to each procedure.

Note that the palliative procedure pathway (meaning procedures that are typically but not exclusively undertaken in single ventricle disease) and AVSD reparative pathway (meaning procedures that are undertaken to repair an AVSD) are in managed in parallel, acknowledging that within the spectrum of the management pathway, patients can experience procedures that are in both these pathways.

In our data management, once a glenn or fontan occurs the patient goes on ‘single ventricle pathway sequence’. Patients who do not have a glenn or fontan are potential patients for the reparative pathway sequence.

If multiple types of pathway procedure happened in the same record, then we mark the procedure as the most complex one with also a plus notation (a plus notation means the procedure is flagged as more complex). The hierarchy/complexity order is: stage three, reparative procedure for AVSD, stage two and palliative first stage procedure.

The first occurrence of a pathway procedure identifies the occurrence of that pathway. Hence for any of the 4 defined pathway procedures, i.e., palliative first stage procedure, stage two, stage three and reparative procedure for AVSD, only the first occurrence will be the pathway of that type. Any subsequent occurrence of a procedure in the same pathway group will be identified as a re-do or additional or off pathway procedure. Note if palliative first stage procedure appeared after stage two/three, it will be off pathway procedure. Patients can have up 4 pathway procedures in whole history.

Patients who have a procedure before the first pathway procedure are considered to have had a ‘pre-pathway procedure’. These will be described.

Patients who have no pathway procedures will overlap in the types of procedures they are having with pre-pathway procedures, these will be described.

Then patients who have a pathway procedure and then have additional (post pathway), additional or off pathway procedures which will be described divided by the stage at which they occur.

1.5 ventricle pathway – can be reported as a subset of single ventricle pathway, only occurs in tetralogy AVSD (not in the other types of AVSD) and can be reported if there is a reparative procedure and a stage two procedure but no stage three procedure.

## Pathway applicable to AVSD

Assign pathway type to each procedure:

### Palliative procedure or SV pathway in AVSD

Patients may have staged procedures that also occur in ‘the single ventricle pathway’, i.e., palliative first stage procedure, stage two and stage three.

#### Palliative first stage procedure:

##### Table E: Palliative stage one type procedures that may occur in AVSD

|  |
| --- |
| **Type A: Norwood type (including Sano and Damus)** |
| 121000: Norwood type procedure |
| 120643: Right ventricle to pulmonary artery valveless conduit construction (Japanese modification: 'Sano') as part of Norwood procedure |
| 120903: Damus-Kaye-Stansel type procedure: pulmonary trunk to aorta end/side anastomosis. Should be with one of (may not always be coded):   * 123103: Modified R Blalock interposition shunt * 123104: Modified L Blalock interposition shunt * 123106: Central systemic-PA interposition shunt * 123146: Modified Blalock interposition shunt |
| **Type B: Coarctation/interrupted arch repair** |
| 121800: Coarctation-hypoplasia of aorta repair |
| 121801: Aortic coarctation-hypoplasia repair by resection & end to end anastomosis |
| 121802: Aortic coarctation-hypoplasia repair by patch aortoplasty |
| 121803: Aortic coarctation-hypoplasia repair by subclavian flap aortoplasty |
| 121804: Balloon dilation of native aortic coarctation-hypoplasia |
| 121810: Aortic coarctation-hypoplasia repair by resection & extended end to end anastomosis |
| 121815: Aortic coarctation-hypoplasia repair by resection & insertion of tube graft |
| 121827: Aortic coarctation transluminal obstruction relief |
| 121830: Aortic arch repair |
| 122100: Interrupted aortic arch repair. |
| **Type C Hybrid procedure** |
| Codes in isolation |
| 121004. Application of bilateral pulmonary arterial bands & transcatheter placement of stent in arterial duct, |
| 122020. Hypoplastic left heart syndrome hybrid approach (transcatheter & surgery): stage 1, |
| 122021. Hypoplastic left heart syndrome hybrid strategy (transcatheter & surgery) |
| 124130: Hybrid strategy (combined surgical & transluminal). |
| Combination codes: One of these |
| 121014: Stent placement in arterial duct (PDA stand) |
| 124511: Stent placement |
| And one the these within 4 weeks: |
| 121419: Application of right & left pulmonary arterial bands |
| 121402: Pulmonary trunk band (PA band). |
| **Type D: Securing pulmonary blood flow, e.g. systemic-to-pulmonary arterial shunt** |
| 121014: Stent placement in arterial duct (PDA) |
| 123103: Modified R Blalock interposition shunt |
| 123104: Modified L Blalock interposition shunt |
| 123106: Central systemic-PA interposition shunt |
| 123130: Systemic-to-pulmonary arterial shunt procedure |
| 123146: Modified Blalock interposition shunt |
| 121302: Pulmonary valvotomy: open |
| 120821: Subpulmonary obstruction relief |
| 120618: Stent placement in right ventricular outflow tract |
| 120641: Right ventricular outflow tract obstruction relief |
| 123601: Right ventricle to pulmonary arterial tree conduit construction |
| 123105: Waterston (ascending aorta-right pulmonary artery) anastomosis |
| 121305: Balloon dilation of pulmonary valve |
| 121309: Pulmonary valvar transluminal perforation & dilation |
| 120612.Right ventricle to pulmonary artery valveless conduit construction. |
| **Type E: Protecting pulmonary vascular bed from excessive flow, e.g. Pulmonary trunk Band** |
| 121402: Pulmonary trunk band (PA band) |

If the patient has either or both of these procedures (Glenn and or Fontan), then the patient has undertaken a ‘single ventricle pathway’

#### Stage two: Glenn or comprehensive stage two

In presence of code:

* 123111: Bidirectional superior cavopulmonary (Glenn) anastomosis
* 123115: Hemi-Fontan procedure
* 123144: Bilateral bidirectional superior cavopulmonary (Glenn) anastomoses
* 123145: Unidirectional superior cavopulmonary (Glenn) anastomosis
* 123144: Bilateral bidirectional superior cavopulmonary (Glenn) anastomoses
* 123145: Unidirectional superior cavopulmonary (Glenn) anastomosis
* 123172: Superior caval vein to pulmonary artery anastomosis.

#### Stage three: Fontan

In presence of code:

|  |
| --- |
| * 123001: Fontan type procedure |
| * 123005: Total cavopulmonary connection (TCPC) using extracardiac inferior caval vein (IVC)-pulmonary artery conduit with fenestration |
| * 123006: Total cavopulmonary connection (TCPC) with fenestrated lateral atrial tunnel |
| * 123013: Fontan procedure with atrioventricular connection |
| * 123028: Fontan-type connection without fenestration |
| * 123032: Fontan procedure with direct atriopulmonary anastomosis |
| * 123050: Total cavopulmonary connection (TCPC) |
| * 123051: Total cavopulmonary connection (TCPC) with lateral atrial tunnel |
| * 123054: Total cavopulmonary connection (TCPC) using extracardiac inferior caval vein (IVC)-pulmonary artery conduit |
| * 123060: Completion of total cavopulmonary connection (TCPC) using transcatheter inferior to superior caval vein covered stent |
| * 123092.Total cavopulmonary connection (TCPC) using intra-extracardiac conduit: fenestrated. |
| * 123093.Total cavopulmonary connection (TCPC) using intra-extracardiac conduit: nonfenestrated. |

Stage three refinement: if a patient has no stage three but it has the code “123027: Fenestration of Fontan type connection”, then this indicates that a stage three occurred. If a patient has two stage threes without stage two, the first stage three under 1 year old will be stage two.

### AVSD pathway (reparative procedure for AVSD)

In ‘AVSD Repair pathway’ there are five types of reparative procedure for AVSD labelled as i)-v) (tetralogy AVSD repair, complete AVSD repair, patrial AVSD repair, reparative procedure linked to AVSD diagnosis (may with atypical or incomplete coding) and ASD or VSD repairs.

To label the AVSD repair pathway, the pathway is determined by the first pathway procedure that occurs for the patient. Then if two or more AVSD repair types (meaning from i-v) occur in the same record at the same time. then there is a hierarchy to assign which it is assigned to i to v in this order

#### Tetralogy and AVSD repair pathway

Tetralogy and AVSD repair pathway procedures are shown in Table E, and involve either the single code for Tetralogy and AVSD repair, OR a combination of an AVSD repair code with a Tetralogy repair code OR in patients who have an AVSD diagnosis and are considered here, a Tetralogy repair code in isolation is allowed as this may occur in atypical cases or with incomplete coding.

##### Table F: Tetralogy AVSD Repair Codes

|  |
| --- |
| **Single code** |
| 120511. Atrioventricular septal defect (AVSD) & Tetralogy of Fallot repair |
| **Also allow tetralogy of fallot repair codes to be present in isolation** |
| 122601. Tetralogy of Fallot repair |
| 122613. Tetralogy of Fallot repair with transannular patch |
| 122620. Tetralogy of Fallot repair without transannular patch |
| 122701. Double outlet right ventricle with subaortic or doubly committed ventricular septal defect (VSD) & pulmonary stenosis (Fallot-type) repair, |
| **Also allow the following combined codes as tetralogy of fallot repair** |
| Combined codes one of these |
| 120641. Right ventricular outflow tract obstruction relief, |
| 120600. Right ventricular outflow tract procedure, |
| 123601. Right ventricle to pulmonary arterial tree conduit construction, |
| With one of these – AVSD repair codes with Tetralogy of Fallot Repair Codes |
| 120501. AVSD: complete (common valve orifice) repair |
| 120510. AVSD: 'intermediate' repair |
| 120401. AVSD: partial (primum ASD) repair |
| 120409. AVSD: partial with isolated ventricular component |
| 120400: Atrioventricular septal defect procedure |
| 120440: AVSD left atrioventricular valve procedure |
| 124801: Common atrioventricular valvar leaflet (valvoplasty) procedure. |
| 124802: AVSD suturing together sup and inf bridging leaflets |
| 120420: AVSD right atrioventricular valve procedure |
| 129001: Atrioventricular valvar repair. |
| 120801: Common atrioventricular valvar leaflet (valvoplasty) procedure. |
| 120571.Atrioventricular septal defect (AVSD) repair with direct ventricular component closure & patch to atrial component (Nunn/Wilson). |

#### Complete AVSD repair pathway

A complete AVSD repair CAVSD repair is determined by one of the following codes

##### Table G: Complete AVSD repair Codes

|  |
| --- |
| 120501. AVSD: complete (common valve orifice) repair |
| 120510. AVSD: 'intermediate' repair |
| 120571.Atrioventricular septal defect (AVSD) repair with direct ventricular component closure & patch to atrial component (Nunn/Wilson). |

#### Partial AVSD repair pathway

A partial AVSD repair / PAVSD repair is determined by one of the following codes

##### Table H: Partial AVSD repair codes

|  |
| --- |
| 120401. AVSD: partial (primum ASD) repair |
| 120409. AVSD: partial with isolated ventricular component |

#### Other reparative procedure linked to AVSD diagnosis (may with atypical or incomplete coding)

These codes are not typical repair pathway codes however they are noted to arise even as first procedures in patients with AVSD, therefore if arising first we consider these to be the ‘AVSD pathway procedure’. These procedures may also appear as re operations later in the history.

##### Table I: Codes for AVSD repair pathway with atypical or incomplete coding

|  |
| --- |
| 120400: Atrioventricular septal defect procedure |
| 120440: AVSD left atrioventricular valve procedure |
| 124801: Common atrioventricular valvar leaflet (valvoplasty) procedure. |
| 124802: AVSD suturing together sup and inf bridging leaflets |
| 120420: AVSD right atrioventricular valve procedure |
| 129001: Atrioventricular valvar repair. |
| 120303: Mitral leaflet (valvoplasty) procedure. |
| 120300: Mitral valvar procedure. |
| 120304: Mitral valvar annuloplasty. |
| 120311: Mitral valvar replacement |
| 120445: AVSD atrioventricular valve replacement |
| 120418: common atrioventricular valve replacement |

#### ASD or VSD type repairs in AVSD

In patients with an AVSD diagnosis, occasionally the first reparative procedure is listed as either an ASD or a VSD repair. As such this is allowed as a pathway type. Note if these occur at the same time as AVSD repair types i, ii, iii or iv the pathway type is labelled as the applicable type i, ii, iii or iv given the hierarchy in assignment.

##### Table J: ASD repair code

|  |
| --- |
| 120101. Atrial septal defect (ASD) secundum closure |
| 120102. Atrial septal defect (ASD) secundum closure with direct suture |
| 120103. Atrial septal defect (ASD) secundum closure with patch |
| 120106. Atrial septal defect (ASD) secundum closure with transluminal device |
| 120110. Sinus venosus defect (ASD) closure |
| 120122. Atrial septation procedure |

##### Table K: VSD repair code

|  |
| --- |
| 120801. Ventricular septal defect (VSD) closure |
| 120802. Ventricular septal defect (VSD) closure by direct suture |
| 120803. Ventricular septal defect (VSD) closure using patch |
| 120806. Ventricular septal defect (VSD) enlargement, |
| 120807. Ventricular septal defect (VSD) closure with transluminal device |
| 120816. Closure of multiple ventricular septal defect (VSD)s |
| 120828. Intraoperative ventricular septal defect (VSD) closure with transluminal device (hybrid approach) |

# Step 5: Identify AVSD diagnostic subgroups - Subdivide AVSD group in hierarchy

## Tetralogy AVSD

Patients identified step 1 c) (has code 010120, 010117 or 010101) or have tetralogy and AVSD repair step 3) i

## Unbalanced AVSD

Patients identified step 1 d). or patients who have a stage 2 and or a stage 3 or who have stage one type A Norwood type operation or Stage one type C hybrid for HLHS.

## Partial AVSD

Patients with any of these codes.

#### Table L Partial AVSD related codes (definitive evidence)

|  |
| --- |
| 060601. AVSD: isolated atrial component (primum ASD) (partial) |
| 120401. Atrioventricular septal defect (AVSD): partial (primum ASD) repair |
| 120409. Atrioventricular septal defect (AVSD): partial with isolated ventricular component (VSD) repair |

If a patient has both code in [Table N](#_Table_N_Partial) and [O](#_Table_O_Complete), the patient will go in partial AVSD if had partial AVSD repair procedure above 2 years old, otherwise group with complete AVSD (label as ambiguous group).

#### Table M Complete AVSD codes (definitive evidence)

|  |
| --- |
| 050601. Common atrium (virtual absence of atrial septum) |
| 060609. AVSD: atrial & ventricular components with common AV orifice (complete) |
| 120501. Atrioventricular septal defect (AVSD): complete (common valve orifice) repair |

## Complete AVSD

Everyone else

Ambiguous group of complete AVSD if patients had both code from Table L and Table M.

# Step 6: Remove patients according to the violation rules.

## Generic rule: Exclude patients if

* had only non-contributory procedure records via activity algorithm.

## AVSD specific violation rule: Exclude patients if

* had tetralogy diagnostic code (step 1 c) and coaction code Table N

#### Table N: Coarctation code

|  |
| --- |
| 092901. Aortic coarctation |
| 121800. Coarctation-hypoplasia of aorta repair, |
| 121801. Aortic coarctation-hypoplasia repair by resection & end to end anastomosis |
| 121802. Aortic coarctation-hypoplasia repair by patch aortoplasty, |
| 121803. Aortic coarctation-hypoplasia repair by subclavian flap aortoplasty, |

# Step 7: Flagging rules to centre

Include these in the cohort. In future routine monitoring all such patients will be flagged with the treating centres for correction.

## Patients with suspected missing or miscoded data

Major data missing/ Consider the remaining patients as a suspect group for separate reporting if the patient meets these criteria–

If single ventricle pathway then

* Patients recorded as having stage two at less than one month old
* Patients recorded as having stage three at less than six months old
* Patients who had at least one procedure and then no stage two or three before age five years whilst surviving to this age of five years

## If presumably on BV pathway then

* Tetralogy AVSD, Unbalanced AVSD and Complete AVSD patients who survived to the age of two years but no reparative procedure by age two years whatever happened to them after the age of two years (note patients who have no procedures before the reparative but who do have a reparative procedure at older age can be included)
* Patient has a stage one type D but no other evidence of tetralogy AVSD then flag to centre

## Patients with minor data errors/unusual records

Patients can be included in analysis.

Generic flagging rule

* if there is a cardiopulmonary bypass surgery as a pre pathway procedure then flag to centre as please check this patient’s diagnostic and procedure coding is correct

### AVSD flagging rule –

* Patients are partial or complete AVSD in diagnosis subgroup but had secure pulmonary blood flow operation as their first palliative procedure
* Patients are tetralogy AVSD in diagnosis subgroup but had other types reparative procedure for AVSD (not tetralogy AVSD repair).
* Patients who had their pathway procedure identified by combined codes
* Patients who had type iv and v reparative procedure for AVSD.