Green highlights: changes from previous version of this document.

PART 1 (PROCID 1 through 4)				
Variable Short Name/Seq #	Isolated CAB (ProcID=1)	Isolated AVR (ProcID=2)	Isolated MVR** (ProcID=3)	AVR + CAB (ProcID=4)
OpCAB/2120	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy	• No • Yes, unplanned due to surgical complication • Missing	• No • Yes, unplanned due to surgical complication • Missing	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy
OpCAB	OpCAB in(3,5)	OpCab in (NULL, 2,4)	OpCab in (NULL, 2,4)	OpCAB in(3,5)
OpValve/2129	<Not used in this calculation>	• Yes	• Yes	• Yes
OpValve		Opvalve eq 1	Opvalve eq 1	Opvalve eq 1
VSAV/2131	• No • Yes, unplanned due to surgical complication • Missing	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy	• No • Yes, unplanned due to surgical complication • Missing	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy
VSAV	VSAV in (NULL, 2,4)	VSAV in (3,5)	VSAV in (NULL, 2,4)	VSAV in (3,5)
VSAVPr/3395	<Not used in this calculation>	Replacement	<Not used in this calculation>	Replacement
VSAVPr		VSAVPr eq 1		VSAVPr eq 1
VSMV/2133	• No • Yes, unplanned due to surgical complication • Missing	• No • Yes, unplanned due to surgical complication • Missing	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy	• No • Yes, unplanned due to surgical complication • Missing
VSMV	VSMV in (NULL, 2,4)	VSMV in (NULL, 2,4)	VSMV in (3,5)	VSMV in (NULL, 2,4)
VSMVPr/3500	<Not used in this calculation>	<Not used in this calculation>	• Replacement	<Not used in this calculation>
VSMVPr			VSMVPr eq 2	
OCarCongProc1/ 6515	• Missing • PFO, Primary closure • Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair	• Missing • PFO, Primary closure	• Missing • PFO, Primary closure • ASD repair, Primary closure • ASD repair, Patch	• Missing • PFO, Primary closure • Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair
OCarCongProc1	Ocarcongproc1 in (NULL,10,1291,1305)	Ocarcongproc1 in (NULL,10)	Ocarcongproc1 in (NULL,10,20,30)	Ocarcongproc1 in (NULL,10,1291,1305)

OCarCongProc2/ 6520	• Missing • No Other Congenital Procedures • PFO, Primary closure • Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair	• Missing • No Other Congenital Procedures • PFO, Primary closure	• Missing • No Other Congenital Procedures • PFO, Primary closure • ASD repair, Primary closure • ASD repair, Patch	• Missing • No Other Congenital Procedures • PFO, Primary closure • Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair
OCarCongProc2	Ocarcongproc2 in (NULL,1,10,1291,1305)	Ocarcongproc2 in (NULL,1,10)	Ocarcongproc2 in (NULL,1, 10,20,30)	Ocarcongproc2 in (NULL,1, 10,1291,1305)
OCarCongProc3/ 6525	• Missing • No Other Congenital Procedures • PFO, Primary closure • Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair	• Missing • No Other Congenital Procedures • PFO, Primary closure	• Missing • No Other Congenital Procedures • PFO, Primary closure • ASD repair, Primary closure • ASD repair, Patch	• Missing • No Other Congenital Procedures • PFO, Primary closure • Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair
OCarCongProc3	Ocarcongproc3 in (NULL,1,10,1291,1305)	Ocarcongproc3 in (NULL,1,10)	Ocarcongproc3 in (NULL,1,10,20,30)	Ocarcongproc3 in (NULL,1,10,1291,1305)

Tricuspid Procedures: VSTV/2134 VSTrPr/3636 VSTrValvec/3683	Unplanned Surgical Complications ONLY
	
	VSTV is one of :
	• No
	• Yes, unplanned due to surgical complication
	• Missing
		Unplanned Surgical Complications ONLY
		
		VSTV is one of :
		• No
		• Yes, unplanned due to surgical complication
		• Missing
			All tricuspid repairs are allowed. Tricuspid replacements or surgical prosthetic valve intervention – Not explant of valve or Valvectomies are only allowed if the tricuspid procedure was unplanned due to surgical complications. Must satisfy at least one of (1) or (2):
			1.
			VSTrPr:
			  • Repair
			  • Missing
			AND
			VsTrValvec
			  • No
				Unplanned Surgical Complications ONLY
				
				VSTV is one of :
				• No
				• Yes, unplanned due to surgical complication
				• Missing

			• Missing
			2.
			  VSTV
			   • Yes, unplanned due to surgical complication"
			   • No
			   • Missing	

Tricuspid Procedures: VSTV VSTrPr VSTrValvec	VSTV in (NULL, 2,4)	VSTV in (NULL, 2,4)	[VSTrPr in (NULL, 1) AND VsTrValvec in (NULL, 2)] OR VSTV in (NULL, 2, 4)	VSTV in (NULL, 2,4)
VSPV/2135	• No • Yes, unplanned due to surgical complication • Missing			
VSPV	VSPV in (NULL, 2,4)			
PrevVADExp/ 3825	• Yes, not during this procedure • No • Missing			
PrevVADExp	PrevVADExp in (NULL, 1,3)			
VADImpTmg/ 3845	• Pre-Operative (during same hospitalization and prior to OR trip for CV surgical procedure) • In conjunction with CV surgical procedure (same trip to the OR)- unplanned • Post-Operative (after surgical procedure during reoperation) • Missing			
VADImpTmg	VADImpTmg in (NULL, 1, 4, 5)			
VADImpTmg2/ 3900	• Pre-Operative (during same hospitalization and prior to OR trip for CV surgical procedure) • In conjunction with CV surgical procedure (same trip to the OR)- unplanned • Post-Operative (after surgical procedure during reoperation) • Missing			
VADImpTmg2	VADImpTmg2 in (NULL, 1, 4, 5)			
VADImpTmg3/ 3955	• Pre-Operative (during same hospitalization and prior to OR trip for CV surgical procedure) • In conjunction with CV surgical procedure (same trip to the OR)- unplanned • Post-Operative (after surgical procedure during reoperation) • Missing			
VADImpTmg3	VADImpTmg3 in (NULL, 1, 4, 5)			
VExp/3875	• Yes, not during this procedure • No • Missing			

VExp	VExp in (NULL, 3, 2)			
VExp2/3930	• Yes, not during this procedure • No • Missing			
VExp2	VExp2 in (NULL, 3, 2)			
VExp3/3985	• Yes, not during this procedure • No • Missing			
VExp3	VExp3 in (NULL, 3, 2)			
OCarLVA/4054	• No • Missing			
OCarLVA	OCarLVA in (NULL, 2)			
OCarAcqVSD/4131	• No • Missing			
OCarAcqVSD	OCarAcqVSD in (NULL, 2)			
AortProc/2123	• No • Yes, unplanned due to surgical complication • Missing			
AortProc	Aortproc in (NULL, 2,4)			
EndovasProc/5066	• No • Missing			
EndovasProc	EndovasProc in (NULL, 2)			
OCarAFibLesLoc/ 4191	• Epicardial • None • Missing	• Epicardial • None • Missing	\<Not used in this calculation\>	• Epicardial • None • Missing
OCarAFibLesLoc	OCarAFibLesLoc not in(2,3)	OCarAFibLesLoc not in(2,3)		OCarAFibLesLoc not in(2,3)
OCardASDRep/ 4136	• No • Missing	• No • Missing	\<Not used in this calculation\>	• No • Missing
OCardASDRep	OCardASDRep in (NULL, 2)	OCardASDRep in (NULL, 2)		OCardASDRep in (NULL, 2)
OCarACD/ 4055	\<Not used in this calculation\>	\<Not used in this calculation\>	• None • Missing • Pacemaker	\<Not used in this calculation\>
OCarACD			OCarACD in (NULL, 1, 2)	

OCarACDLE/ 4065	• Yes, unplanned due to surgical complication • No • Missing			
OCarACDLE	OCarACDLE in (NULL, 2,4)			
OCarLasr/4110	<Not used in this calculation>	<Not used in this calculation>	• No • Missing	<Not used in this calculation>
OCarLasr			OCarLasr in (NULL, 2)	
OCPulThromDis/ 4052	• No • Missing			
OCPulThromDis	OCPulThromDis in (NULL, 1)			
OCarSubaStenResTy / 4051	• No • Missing • Not Documented			
OCarSubaStenResTy	OCarSubaStenResTy in (NULL, 5,7)			
OCarCrTx/4120	• No • Missing			
OCarCrTx	OCarCrTx in (NULL, 2)			
OCarTrma/4125	• No • Missing			
OCarTrma	OCarTrma in (NULL, 2)			
OCTumor/4115	• No • Missing			
OCTumor	OCTumor in (NULL, 1)			
OCarOthr/4135	• No • Missing			
OCarOthr	OCarOthr in (NULL, 2)			
VSTCV/3400	• No • Missing			
VSTCV	VSTCV in (NULL, 2)			
VSTCVMit/3610	• No • Missing			
VSTCVMit	VSTCVMit in (NULL, 2)			
VSTCVTri/3652	• No • Missing			
VSTCVTri	VSTCVTri in (NULL, 2)			
VSTCVPu/3695	• No • Missing			

VSTCVPu	VSTCVPu in (NULL, 2)
ONCCarEn/6530	• No • Yes, unplanned due to surgical complication • Missing
ONCCarEn	ONCCarEn in (NULL, 2, 4)
ONCOVasc/6535	• No • Yes, unplanned due to surgical complication • Missing
ONCOVasc	ONCOVasc in (NULL, 2, 4)
ONCOThor/6540	• No • Yes, unplanned due to surgical complication • Missing
ONCOThor	ONCOThor in (NULL, 2, 4)
ONCOther/6545	• No • Yes, unplanned due to surgical complication • Missing
ONCOther	ONCOther in (NULL, 2, 4)

Variable Short Name	MVR + CAB** (ProcID=5)	AVR + MVR** (ProcID=6)	MV Repair** (ProcID=7)	MV Repair + CAB** (ProcID=8)
	PART 2 (PROCID 5 through 8)			
OpCAB/2120	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy	• No • Yes, unplanned due to surgical complication • Missing	• No • Yes, unplanned due to surgical complication • Missing	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy
OpCAB	OpCAB in(3,5)	OpCab in (NULL, 2,4)	OpCab in (NULL, 2,4)	OpCAB in(3,5)
OpValve/2125	• Yes	• Yes	• Yes	• Yes
OpValve	Opvalve eq 1	Opvalve eq 1	Opvalve eq 1	Opvalve eq 1
VSAV/3390	• No • Yes, unplanned due to surgical complication • Missing	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy	• No • Yes, unplanned due to surgical complication • Missing	• No • Yes, unplanned due to surgical complication • Missing
VSAV	VSAV in (NULL, 2,4)	VSAV in (3,5)	VSAV in (NULL, 2,4)	VSAV in (NULL, 2,4)
VSAVPr/3395	<Not used in this calculation>	• Replacement	<Not used in this calculation>	<Not used in this calculation>
VSAVPr		VSAVPr eq 1		
VSMV/3495	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy	• Yes, planned • Yes, unplanned due to unsuspected disease or anatomy
VSMV	VSMV in (3,5)	VSMV in (3,5)	VSMV in (3,5)	VSMV in (3,5)
VSMVPr/3500	• Replacement	• Replacement	• Repair	• Repair
VSMVPr	VSMVPr eq 2	VSMVPr eq 2	VSMVPr eq 1	VSMVPr eq 1
OCarCongProc1/ 6515	• Missing • PFO, Primary closure • Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair • ASD repair, Primary closure • ASD repair, Patch	• Missing • PFO, Primary closure • ASD repair, Primary closure • ASD repair, Patch	• Missing • PFO, Primary closure • ASD repair, Primary closure • ASD repair, Patch	• Missing • PFO, Primary closure • Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair • ASD repair, Primary closure • ASD repair, Patch
OCarCongProc1	Ocarcongproc1 in (NULL,10,20, 30,1291,1305)	Ocarcongproc1 in (NULL,10,20,30)	Ocarcongproc1 in (NULL,10,20,30)	Ocarcongproc1 in (NULL,10,20,30,1291,1305)
OCarCongProc2/ 6520	• Missing • No Other Congenital Procedures • PFO, Primary closure	• Missing • No Other Congenital Procedures • PFO, Primary closure • ASD repair, Primary closure	• Missing • No Other Congenital Procedures • PFO, Primary closure • ASD repair, Primary closure	• Missing • No Other Congenital Procedures • PFO, Primary closure

Variable Short Name	MVR + CAB** (ProcID=5)	AVR + MVR** (ProcID=6)	MV Repair** (ProcID=7)	MV Repair + CAB** (ProcID=8)
PART 2 (PROCID 5 through 8)				
	• Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair • ASD repair, Primary closure • ASD repair, Patch	• ASD repair, Patch	• ASD repair, Patch	• Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair • ASD repair, Primary closure • ASD repair, Patch
OCarCongProc2	Ocarcongproc2 in (NULL,1,10, 20, 30,1291,1305)	Ocarcongproc2 in (NULL,1,10,20,30)	Ocarcongproc2 in (NULL,1,10,20,30)	Ocarcongproc2 in (NULL,1,10, 20, 30,1291,1305)
OCarCongProc3/ 6525	• Missing • No Other Congenital Procedures • PFO, Primary closure • Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair • ASD repair, Primary closure • ASD repair, Patch	• Missing • No Other Congenital Procedures • PFO, Primary closure • ASD repair, Primary closure • ASD repair, Patch	• Missing • No Other Congenital Procedures • PFO, Primary closure • ASD repair, Primary closure • ASD repair, Patch	• Missing • No Other Congenital Procedures • PFO, Primary closure • Anomalous origin of coronary artery from pulmonary artery repair • Anomalous aortic origin of coronary artery from aorta (AAOCA) repair • ASD repair, Primary closure • ASD repair, Patch
OCarCongProc3	Ocarcongproc3 in (NULL,1,10, 20, 30,1291,1305)	Ocarcongproc3 in (NULL,1,10,20,30)	Ocarcongproc3 in (NULL,1,10,20,30)	Ocarcongproc3 in (NULL,1,10, 20, 30,1291,1305)

Tricuspid Procedures: VSTV/2134 VSTrPr/3636 VSTrValvec/3683	All tricuspid repairs are allowed. Tricuspid replacements or surgical prosthetic valve intervention – Not explant of valve or Valvectomies are only allowed if the tricuspid procedure was unplanned due to surgical complications. Must satisfy at least one of (1) or (2):
	1.
	  VSTrPr:
	    • Repair
	    • Missing
	  AND
	  VsTrValvec
	    • No
		All tricuspid repairs are allowed. Tricuspid replacements or surgical prosthetic valve intervention – Not explant of valve or Valvectomies are only allowed if the tricuspid procedure was unplanned due to surgical complications. Must satisfy at least one of (1) or (2):
		1.
		  VSTrPr:
		    • Repair
		    • Missing
		  AND
		  VsTrValvec
		    • No
			All tricuspid repairs are allowed. Tricuspid replacements or surgical prosthetic valve intervention – Not explant of valve or Valvectomies are only allowed if the tricuspid procedure was unplanned due to surgical complications. Must satisfy at least one of (1) or (2):
			1.
			  VSTrPr:
			    • Repair
			    • Missing
			  AND
			  VsTrValvec
			    • No
				All tricuspid repairs are allowed. Tricuspid replacements or surgical prosthetic valve intervention – Not explant of valve or Valvectomies are only allowed if the tricuspid procedure was unplanned due to surgical complications. Must satisfy at least one of (1) or (2):
				1.
				  VSTrPr:
				    • Repair
				    • Missing
				  AND
				  VsTrValvec
				    • No

PART 2 (PROCID 5 through 8)				
Variable Short Name	**MVR + CAB** (ProcID=5)**	**AVR + MVR** (ProcID=6)**	**MV Repair** (ProcID=7)**	**MV Repair + CAB** (ProcID=8)**
	• Missing 2. VSTV • Yes, unplanned due to surgical complication” • No • Missing	• Missing 2. VSTV • Yes, unplanned due to surgical complication” • No • Missing	• Missing 2. VSTV • Yes, unplanned due to surgical complication” • No • Missing	• Missing 2. VSTV • Yes, unplanned due to surgical complication” • No • Missing
Tricuspid Procedures VSTV VSTrPr VSTrValvec	[VSTrPr in (NULL, 1) AND VsTrValvec in (NULL, 2)] OR VSTV in (NULL, 2, 4)	[VSTrPr in (NULL, 1) AND VsTrValvec in (NULL, 2)] OR VSTV in (NULL, 2, 4)	[VSTrPr in (NULL, 1) AND VsTrValvec in (NULL, 2)] OR VSTV in (NULL, 2, 4)	[VSTrPr in (NULL, 1) AND VsTrValvec in (NULL, 2)] OR VSTV in (NULL, 2, 4)
VSPV/3685	• No • Yes, unplanned due to surgical complication • Missing			
VSPV	VSPV in (NULL, 2,4)			
PrevVADExp/ 3825	• Yes, not during this procedure • No • Missing			
PrevVADExp	PrevVADExp in (NULL, 1,3			
VADImpTmg/ 3845	• Pre-Operative (during same hospitalization but not same OR trip as CV surgical procedure) • In conjunction with CV surgical procedure (same trip to the OR)- unplanned • Post-Operative (after surgical procedure during reoperation) • Missing			
VADImpTmg	VADImpTmg in (NULL, 1, 4, 5)			
VADImpTmg2/ 3900	• Pre-Operative (during same hospitalization but not same OR trip as CV surgical procedure) • In conjunction with CV surgical procedure (same trip to the OR)- unplanned • Post-Operative (after surgical procedure during reoperation) • Missing			
VADImpTmg2	VADImpTmg2 in (NULL, 1, 4, 5)			
VADImpTmg3/ 3955	• Pre-Operative (during same hospitalization but not same OR trip as CV surgical procedure) • In conjunction with CV surgical procedure (same trip to the OR)- unplanned • Post-Operative (after surgical procedure during reoperation) • Missing			
VADImpTmg3	VADImpTmg3 in (NULL, 1, 4, 5)			

Variable Short Name	PART 2 (PROCID 5 through 8)			
	MVR + CAB** (ProcID=5)	AVR + MVR** (ProcID=6)	MV Repair** (ProcID=7)	MV Repair + CAB** (ProcID=8)
VExp/3875	• Yes, not during this procedure • No • Missing			
VExp	VExp in (NULL, 3, 2)			
VExp2/3930	• Yes, not during this procedure • No • Missing			
VExp2	VExp2 in (NULL, 3, 2)			
VExp3/3985	• Yes, not during this procedure • No • Missing			
VExp3	VExp3 in (NULL, 3, 2)			
OCarLVA/4075	• No • Missing			
OCarLVA	OCarLVA in (NULL, 2)			
OCarAcqVSD/4131	• No • Missing			
OCarAcqVSD	OCarAcqVSD in (NULL, 2)			
AortProc/2125	• No • Yes, unplanned due to surgical complication • Missing			
AortProc	Aortproc in (NULL, 2,4)			
EndovasProc/5066	• No • Missing			
EndovasProc	EndovasProc in (NULL, 2)			
OCarAFibLesLoc/4191	<Not used in this calculation>	<Not used in this calculation>	<Not used in this calculation>	<Not used in this calculation>
OCarAFibLesLoc				
OCardASDRep/4136	<Not used in this calculation>	<Not used in this calculation>	<Not used in this calculation>	<Not used in this calculation>
OCardASDRep				
OCarACD 4055	• None • Missing • Pacemaker	• None • Missing • Pacemaker	• None • Missing • Pacemaker	• None • Missing • Pacemaker

Variable Short Name	PART 2 (PROCID 5 through 8)			
	MVR + CAB** (ProcID=5)	AVR + MVR** (ProcID=6)	MV Repair** (ProcID=7)	MV Repair + CAB** (ProcID=8)
OCarACD	OCarACD in (NULL, 1, 2)	OCarACD in (NULL, 1, 2)	OCarACD in (NULL, 1, 2)	OCarACD in (NULL, 1, 2)
OCarACDLE/4065	• Yes, unplanned due to surgical complication • No • Missing			
OCarACDLE	OCarACDLE in (NULL, 2,4)			
OCarLasr/4110	• No • Missing	• No • Missing	• No • Missing	• No • Missing
OCarLasr	OCarLasr in (NULL, 2)	OCarLasr in (NULL, 2)	OCarLasr in (NULL, 2)	OCarLasr in (NULL, 2)
OCPulThromDis/ 4085	• No • Missing			
OCPulThromDis	OCPulThromDis in (NULL, 1)			
OCarSubaStenResTy/ 4051	• No • Missing • Not Documented			
OCarSubaStenResTy	OCarSubaStenResTy in (NULL, 5,7)			
OCarCrTx/4120	• No • Missing			
OCarCrTx	OCarCrTx in (NULL, 2)			
OCarTrma/4125	• No • Missing			
OCarTrma	OCarTrma in (NULL, 2)			
OCTumor/4115	• No • Missing			
OCTumor	OCTumor in (NULL, 1)			
OCarOthr/4135	• No • Missing			
OCarOthr	OCarOthr in (NULL, 2)			
VSTCV/3400	• No • Missing			
VSTCV	VSTCV in (NULL, 2)			
VSTCVMit/3610	• No • Missing			
VSTCVMit	VSTCVMit in (NULL, 2)			
VSTCVTri/3652	• No			

	PART 2 (PROCID 5 through 8)			
Variable Short Name	MVR + CAB** (ProcID=5)	AVR + MVR** (ProcID=6)	MV Repair** (ProcID=7)	MV Repair + CAB** (ProcID=8)
	• Missing			
VSTCVTri	VSTCVTri in (NULL, 2)			
VSTCVPu/3695	• No • Missing			
VSTCVPu	VSTCVPu in (NULL, 2)			
ONCCarEn/6530	• No • Yes, unplanned due to surgical complication • Missing			
ONCCarEn	ONCCarEn in (NULL, 2, 4)			
ONCOVasc/6535	• No • Yes, unplanned due to surgical complication • Missing			
ONCOVasc	ONCOVasc in (NULL, 2, 4)			
ONCOThor/6540	• No • Yes, unplanned due to surgical complication • Missing			
ONCOThor	ONCOThor in (NULL, 2, 4)			
ONCOther/6545	• No • Yes, unplanned due to surgical complication • Missing			
ONCOther	ONCOther in (NULL, 2, 4)			

Note 1: If DischMtPtAcuteHospStill [7005]=Yes, then PROCID should not be applied. These patients are excluded from analysis population.

Note 2: All Transcatheter valve procedures are removed from analysis before applying this PROCID algorithm. Transcatheters are defined as follows:

Aortic: vstcv eq **1** or (vstcv eq **NULL** and
    vsaoim in(**264,404,412,262,263,423,424, 445,446,447,448,449,450,451,452,468,477,478,498,502,505,506,507,508,509**))

Mitral: vstcvmit eq **1** or vsmvrepapp eq **1** or mitralimplantty in(**2,9,10,11**) or
    (vstcvmit eq **NULL** and vsmvrepapp eq **NULL** and mitralimplantty eq **NULL** and
    vsmiim in(**264,404, 412,262,263,423,424, 445,446,447,448,449,450,451,452,468,477,478,498,502,505,506,507,508,509**))

Tricuspid: vstcvtri eq **1** or tricusimplantty in(**4**) or (vstcvtri eq **NULL** and tricusimplantty eq **NULL** and
    vstrim in(**264,404,412,262,263,423,424, 445,446,447,448,449,450,451,452,468,477,478,498,502,505,506,507,508,509**)) or

Pulmonic: vstcvpu eq **1** or pulmonicimplantty in(**4**) or (vstcvpu eq **NULL** and pulmonicimplantty eq **NULL** and
    vspuim in(**264, 404, 412, 262,263,423,424, 445,446,447,448,449,450,451,452,468,477,478,498,502,505,506,507,508,509**))

The following fields from 2.9 data version are no longer collected in 4.20.2:

VSTrReplace and VSTrRepair – Substituted by VSTrPr (1=Repair/2=Replacement/3=Surgical Prosthetic Valve Intervention (Not explant of valve))

OCarVSD – Substituted by OCarAcqVSD

OCarAfibIntraLes – We only use OCarAFibLesLoc to retain EPICARDIAL location in PROCID 1,2,4.

OCarASDSec – Substituted by OCardASDRep

OCarSubaStenRes – Substituted by OCarSubaStenResTy

OCarSVR – No longer collected. These procedures are now included in OCarOthr (4135) – Other Cardiac Procedures.

CCancCase – No longer collected.

The following fields have been changed or have different options.

VSAVPr (1=Replacement/2=Repair) TO (1=Replacement/2=Repair/3=Surgical Prosthetic Valve Intervention (Not explant of valve))

VSMVPr (1=Repair/2=Replacement) TO (1=Repair/2=Replacement/3=Surgical Prosthetic Valve Intervention (Not explant of valve))

By consensus, conference call 6/5/2020: Option 3 (Surgical Prosthetic Intervention) is not considered a Replacement nor a Repair. We ignore this code option when defining REPLACEMENTS and when defining MV REPAIRS.

As a concomitant procedure, it is only allowed if VSMV and VSAV are UNPLANNED, DUE TO SURGICAL COMPLICATIONS.

VSTrPr (VSTrRepair Yes/No and VSTrReplace Yes/No and VSTrValvec Yes/No) REPLACED BY (VSTrPr: 1=Repair/2=Replacement/3=Surgical Prosthetic Valve Intervention (Not explant of valve)).

By consensus, conference call 6/5/2020: Option 3 is ignored. For Mitral Valve Isolated Procedures (PROCID 3,5,6,7,8) we allowed only VSTrPr=1 Repair or Null. Replacements and Surgical Prosthetic Interventions are only allowed if VSTV=Unplanned, due to surgical complications.