Note, fields in green are new in v2.9x, fields in yellow are added or changed from the v2.81 definition

		PART 1 (PROCID 1 thro	ough 4)	
Variable Short	Isolated CAB	Isolated AVR	Isolated MVR	AVR + CAB
Name	(ProcID=1)	(ProcID=2)	(ProcID=3)	(ProcID=4)
OpCAB	Yes, planned	• No	• No	• Yes, planned
		• Yes, unplanned due to surgical complication	Yes, unplanned due to surgical complication	
		Missing	Missing	
OpCAB	Opcab eq 3	OpCab in (NULL, 2,4)	OpCab in (NULL, 2,4)	OpCAB eq 3
OpValve	<not calculation="" in="" this="" used=""></not>	• Yes	• Yes	• Yes
OpValve		Opvalve eq 1	Opvalve eq 1	Opvalve eq 1
VSAV	• No	Yes, planned	• No	• Yes, planned
	• Yes, unplanned due to surgical	• Yes, unplanned due to unsuspected	Yes, unplanned due to surgical	• Yes, unplanned due to unsuspected
	complication	disease or anatomy	complication	disease or anatomy
	• Missing		Missing	
VSAV	VSAV in (NULL, 2,4)	VSAV in (3,5)	VSAV in (NULL, 2,4)	VSAV in (3,5)
VSAVPr	<not calculation="" in="" this="" used=""></not>	Replacement	<not calculation="" in="" this="" used=""></not>	Replacement
VSAVPr		VSAVPr eq 1		VSAVPr eq 1
VSMV	• No	• No	• Yes, planned	• No
	• Yes, unplanned due to surgical	• Yes, unplanned due to surgical	• Yes, unplanned due to unsuspected	• Yes, unplanned due to surgical
	complication	complication	disease or anatomy	complication
	Missing	Missing		• Missing
VSMV	VSMV in (NULL, 2,4)	VSMV in (NULL, 2,4)	VSMV in (3,5)	VSMV in (NULL, 2,4)
VSMVPr	<not calculation="" in="" this="" used=""></not>	<not calculation="" in="" this="" used=""></not>	Replacement	<not calculation="" in="" this="" used=""></not>
VSMVPr			VSMVPr eq 2	
OCarCongProc1	• Missing	Missing	• Missing	• Missing
	• PFO, Primary closure	• PFO, Primary closure	PFO, Primary closure	• PFO, Primary closure
	 Anomalous origin of coronary 		ASD repair, Primary closure	Anomalous origin of coronary
	artery from pulmonary artery		ASD repair, Patch	artery from pulmonary artery
	repair			repair
	• Anomalous aortic origin of			Anomalous aortic origin of
	coronary artery from aorta			coronary artery from aorta
	(AAOCA) repair			(AAOCA) repair

		PART 1 (PROCID 1 thr	rough 4)	
Variable Short Name	Isolated CAB (ProcID=1)	Isolated AVR (ProcID=2)	Isolated MVR (ProcID=3)	AVR + CAB (ProcID=4)
OCarCongProc1	Ocarcongproc1 in (NULL,10,1291,1305)	Ocarcongproc1 in (NULL,10)	Ocarcongproc1 in (NULL,10,20,30)	Ocarcongproc1 in (NULL,10,1291,1305)
OCarCongProc2	 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
OCarCongProc2	Ocarcongproc2 in (NULL,10,1291,1305)	Ocarcongproc2 in (NULL,10)	Ocarcongproc2 in (NULL,10,20,30)	Ocarcongproc2 in (NULL,10,1291,1305)
OCarCongProc3	 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
OCarCongProc3	Ocarcongproc3 in (NULL,10,1291,1305)	Ocarcongproc3 in (NULL,10)	Ocarcongproc3 in (NULL,10,20,30)	Ocarcongproc3 in (NULL,10,1291,1305)
Tricuspid Procedures: VSTV VSTrReplace VSTrValvec	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 and valvecotomies are only allowed if the tricuspid procedure was unplanned due to surgical complications. Must satisfy at least one of (1) or (2): 1. VSTrReplace: • No • Missing AND VSTrValvec: • No • Missing	Unplanned Surgical Complications ONLY VSTV is one of: No Yes, unplanned due to surgical complication Missing

	PART 1 (PROCID 1 through 4)					
Variable Short	Isolated CAB	Isolated AVR	Isolated MVR	AVR + CAB		
Name	(ProcID=1)	(ProcID=2)	(ProcID=3)	(ProcID=4)		
Tricuspid	VSTV in (NULL, 2,4)	VSTV in (NULL, 2,4)	2. VSTV • Yes, unplanned due to surgical complication"] [VSTrReplace in (NULL, 2) and	VSTV in (NULL, 2,4)		
Procedures: VSTV VSTrReplace VSTrValvec	7.5.7 (2.0.2.2, 2, 1)		VSTrValvec in (NULL,2)] OR VSTV eq 4	, o i v iii (v e 22, 2, v)		
VSPV			• No			
		-	e to surgical complication			
			Missing			
VSPV		VSPV in (NULL, 2,4)				
PrevVADExp	Yes, not during this procedureNo					
	• Missing					
PrevVADExp		PrevVADExp in (NULL, 1,3)				
VADImpTmg	 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	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			g2 in (NULL, 1, 4, 5)			
VADImpTmg3	 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		VADImpTmg	g3 in (NULL, 1, 4, 5)			
VExp			ring this procedure • No			

		PART 1 (PROCID 1 thro	ough 4)		
Variable Short	Isolated CAB	Isolated AVR	Isolated MVR	AVR + CAB	
Name	(ProcID=1)	(ProcID=2)	(ProcID=3)	(ProcID=4)	
VE		• Missing			
VExp VExp2		VExp in (NULL, 3, 2) • Yes, not during this procedure			
v Exp2			No		
			No Hissing		
VExp2			1 (NULL, 3, 2)		
VExp3			ing this procedure		
·			No		
		• N	fissing		
VExp3		VExp3 in	1 (NULL, 3, 2)		
OCarLVA		•	No		
			l issing		
OCarLVA			A in (NULL, 2)		
OCarVSD			No		
		• N	fissing		
OCarVSD OCARVSD		OCarVSI	O in (NULL, 2)		
AortProc			No		
	• Yes, unplanned due to surgical complication				
	• Missing				
AortProc		•	in (NULL, 2,4)		
EndovasProc			No Viscina		
EndovasProc			fissing oc in (NULL, 2)		
OCarAFibIntraLes	• No	• No	Not used in this calculation>	• No	
o curri romando	• Missing	• Missing	a tot used in this calculations	• Missing	
OCarAFibIntraLes	OcarAFibIntraLes in (NULL, 2)	OcarAFibIntraLes in (NULL, 2)		OcarAFibIntraLes in (NULL, 2)	
OCarAFibLesLoc	Primarily epicardial	Primarily epicardial	<not calculation="" in="" this="" used=""></not>	Primarily epicardial	
	• Missing	• Missing		• Missing	
OCarAFibLesLoc	OCarAFibLesLoc ne 2	OCarAFibLesLoc ne 2		OCarAFibLesLoc ne 2	
OCarASDSec OCARAST OF THE OCARAST OCARAS	• No	• No	<not calculation="" in="" this="" used=""></not>	• No	
	• Missing	• Missing		Missing	

		PART 1 (PROCID 1 thr	ough 4)		
Variable Short Name	Isolated CAB (ProcID=1)	Isolated AVR (ProcID=2)	Isolated MVR (ProcID=3)	AVR + CAB (ProcID=4)	
OCarASDSec	OCarASDSec in (NULL, 2)	OCarASDSec in (NULL, 2)		OCarASDSec in (NULL, 2)	
OCarACD OCarACD	<not calculation="" in="" this="" used=""></not>	<not calculation="" in="" this="" used=""></not>	 No Missing Permanent Pacemaker OCarACD in (NULL, 1, 2) 	<not calculation="" in="" this="" used=""></not>	
OCarACDLE		◆ Vos. unplanned due	e to surgical complication		
OCMACDLE			• No Missing		
OCarACDLE		OCarACDL	LE in (NULL, 2,4)		
OCarLasr	<not calculation="" in="" this="" used=""></not>	<not calculation="" in="" this="" used=""></not>	NoMissing	<not calculation="" in="" this="" used=""></not>	
OCarLasr OCarLasr			OCarLasr in (NULL, 2)		
OCPulThromDis		• No • Missing			
OCPulThromDis		OCPulThror	mDis in (NULL, 1)		
OCarSubaStenRes			• No Missing		
OCarSubaStenRes		OCarSubaSte	enRes in (NULL, 2)		
OCarSVR			• No Missing		
OCarSVR		OCarSVI	R in (NULL, 2)		
OCarCrTx			• No		
			Missing		
OCarCrTx			x in (NULL, 2)		
OCarTrma	• No				
OCarTrma	• Missing OCarTrma in (NULL, 2)				
OCTumor	• No				
	• Missing				
OCTumor		OCTumor in (NULL, 1)			
OCarOthr			• No		
		• N	Missing		

PART 1 (PROCID 1 through 4)						
Variable Short	Isolated CAB	Isolated AVR	Isolated MVR	AVR + CAB		
Name	(ProcID=1)	(ProcID=2)	(ProcID=3)	(ProcID=4)		
OCarOthr		OCarOth	in (NULL, 2)			
VSTCV		•	No			
		• N	lissing			
VSTCV		VSTCV	in (NULL, 2)			
VSTCVMit		•	No			
		• N	lissing			
VSTCVMit		VSTCVM	it in (NULL, 2)			
VSTCVTri		•	No			
			lissing			
VSTCVTri			ri in (NULL, 2)			
VSTCVPu			No			
			lissing			
VSTCVPu			u in (NULL, 2)			
CCancCase		• No				
			lissing			
CCancCase			e in (NULL, 2)			
ONCCarEn			No			
			to surgical complication			
			lissing			
ONCCarEn		ONCCarEn in (NULL, 2, 4)				
ONCOVasc		• No				
			to surgical complication			
			lissing			
ONCOVasc			in (NULL, 2, 4)			
ONCOThor			No			
		-	to surgical complication			
			fissing			
ONCOThor			in (NULL, 2, 4)			
ONCOther			No			
			to surgical complication			
			lissing			
ONCOther		ONCOther	in (NULL, 2, 4)			

		PART 2 (PROCID 5 throu	igh 8)	
Variable Short Name	MVR + CAB (ProcID=5)	AVR + MVR (ProcID=6)	MV Repair (ProcID=7)	MV Repair + CAB (ProcID=8)
OpCAB	• Yes, planned	NoYes, unplanned due to surgical complicationMissing	 No Yes, unplanned due to surgical complication Missing 	Yes, planned
OpCAB	Opcab=3	OpCab in (NULL, 2,4)	OpCab in (NULL, 2,4)	OpCAB eq 3
OpValve	• Yes	• Yes	• Yes	• Yes
OpValve	Opvalve eq 1	Opvalve eq 1	Opvalve eq 1	Opvalve eq 1
VSAV	 No Yes, unplanned due to surgical complication Missing 	Yes, plannedYes, unplanned due to unsuspected disease or anatomy	NoYes, unplanned due to surgical complicationMissing	NoYes, unplanned due to surgical complicationMissing
VSAV	VSAV in (NULL, 2,4)	VSAV in (3,5)	VSAV in (NULL, 2,4)	VSAV in (NULL, 2,4)
VSAVPr	<not calculation="" in="" this="" used=""></not>	Replacement	<not calculation="" in="" this="" used=""></not>	<not calculation="" in="" this="" used=""></not>
VSAVPr		VSAVPr eq 1		
VSMV	Yes, plannedYes, unplanned due to unsuspected disease or anatomy	Yes, plannedYes, unplanned due to unsuspected disease or anatomy	Yes, plannedYes, 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	Replacement	Replacement	Repair	• Repair
VSMVPr	VSMVPr eq 2	VSMVPr eq 2	VSMVPr eq 1	VSMVPr eq 1
OCarCongProc1	 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	Missing PFO, Primary closure Anomalous origin of coronary artery from pulmonary artery repair	 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

		PART 2 (PROCID 5 throu	igh 8)	
Variable Short Name	MVR + CAB (ProcID=5)	AVR + MVR (ProcID=6)	MV Repair (ProcID=7)	MV Repair + CAB (ProcID=8)
	 Anomalous aortic origin of coronary artery from aorta (AAOCA) repair ASD repair, Primary closure ASD repair, Patch 			 Anomalous aortic origin of coronary artery from aorta (AAOCA) repair ASD repair, Primary closure ASD repair, Patch
OCarCongProc2	Ocarcongproc2 in (NULL,10, 20, 30,1291,1305)	Ocarcongproc2 in (NULL,10,20,30)	Ocarcongproc2 in (NULL,10,20,30)	Ocarcongproc2 in (NULL,10, 20, 30,1291,1305)
OCarCongProc3	 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
OCarCongProc3	Ocarcongproc3 in (NULL,10, 20, 30,1291,1305)	Ocarcongproc3 in (NULL,10,20,30)	Ocarcongproc3 in (NULL,10,20,30)	Ocarcongproc3 in (NULL,10, 20, 30,1291,1305)
Tricuspid Procedures: VSTV VSTrReplace VSTrValvec	All tricuspid repairs are allowed. Tricuspid replacements and valvecotomies are only allowed if the tricuspid procedure was unplanned due to surgical complications. Must satisfy at least one of (1) or (2): 1. VSTrReplace: • No • Missing AND VSTrValvec: • No • Missing	All tricuspid repairs are allowed. Tricuspid replacements and valvecotomies are only allowed if the tricuspid procedure was unplanned due to surgical complications. Must satisfy at least one of (1) or (2): 1. VSTrReplace: • No • Missing AND VSTrValvec: • No • Missing	All tricuspid repairs are allowed. Tricuspid replacements and valvecotomies are only allowed if the tricuspid procedure was unplanned due to surgical complications. Must satisfy at least one of (1) or (2): 1. VSTrReplace: • No • Missing AND VSTrValvec: • No • Missing	All tricuspid repairs are allowed. Tricuspid replacements and valvecotomies are only allowed if the tricuspid procedure was unplanned due to surgical complications. Must satisfy at least one of (1) or (2): 1. VSTrReplace: • No • Missing AND VSTrValvec: • No • Missing
	2. VSTV	2. VSTV	2. VSTV	2. VSTV

PART 2 (PROCID 5 through 8)					
Variable Short	MVR + CAB	AVR + MVR	MV Repair	MV Repair + CAB	
Name	(ProcID=5)	(ProcID=6)	(ProcID=7)	(ProcID=8)	
	 Yes, unplanned due to 	 Yes, unplanned due to 	 Yes, unplanned due to 	 Yes, unplanned due to 	
	surgical complication"]	surgical complication"]	surgical complication"]	surgical complication"]	
Tricuspid_	[VSTrReplace in (NULL, 2) and	[VSTrReplace in (NULL, 2) and	[VSTrReplace in (NULL, 2) and	[VSTrReplace in (NULL, 2) and	
Procedures Procedures Procedures	VSTrValvec in (NULL,2)]	VSTrValvec in (NULL,2)]	VSTrValvec in (NULL,2)]	VSTrValvec in (NULL,2)]	
VSTV	OR	OR	OR VSTV eq 4	OR	
VSTrReplace VSTrValvec	VSTV eq 4	VSTV eq 4		VSTV eq 4	
VSPV		• 1	vo		
		 Yes, unplanned due to 	surgical complication		
		• Mis			
VSPV		VSPV in (NULL, 2,4)		
PrevVADExp		• Yes, not during			
		• N			
	• Missing				
PrevVADExp			in (NULL, 1,3		
VADImpTmg	• Pre-	Operative (during same hospitalization by		edure)	
		• In conjunction with CV surgical proce			
		• Post-Operative (after surgical			
VADImpTmg		• Mis	ssing n (NULL, 1, 4, 5)		
VADImpTmg2	• Dro	Operative (during same hospitalization by		adura)	
VADIIIpTilig2	• F16-	In conjunction with CV surgical process.		edure)	
		Post-Operative (after surgical)			
		• Mis			
VADImpTmg2			n (NULL, 1, 4, 5)		
VADImpTmg3	• Pre-	Operative (during same hospitalization by		edure)	
		• In conjunction with CV surgical proce	edure (same trip to the OR)- unplanned		
		 Post-Operative (after surgical 	procedure during reoperation)		
	• Missing				
VADImpTmg3	VADImpTmg3 in (NULL, 1, 4, 5)				
VExp		• Yes, not during	2 1		
	• No				
		• Mis	<u> </u>		
VExp			NULL, 3, 2)		
VExp2		• Yes, not during	g this procedure		

	PART 2 (PROCID 5 through 8)				
Variable Short	MVR + CAB	AVR + MVR	MV Repair	MV Repair + CAB	
Name	(ProcID=5)	(ProcID=6)	(ProcID=7)	(ProcID=8)	
	NoMissing				
VExp2			(NULL, 3, 2)		
VExp3		• Yes, not during this procedure			
Lingo			No		
			issing		
VExp3		VExp3 in	(NULL, 3, 2)		
OCarLVA		•	No		
			issing		
OCarLVA			in (NULL, 2)		
OCarVSD OCAR			No		
O.C. Map			issing		
OCarVSD AortProc			in (NULL, 2) No		
AORPIOC			NO so surgical complication		
			issing		
AortProc			n (NULL, 2,4)		
EndovasProc			No		
		• Mi	issing		
EndovasProc			c in (NULL, 2)		
OCarAFibIntraLes	<not calculation="" in="" this="" used=""></not>				
OCarAFibIntraLes					
OCarAFibLesLoc OCarAFibLesLoc	<not calculation="" in="" this="" used=""></not>				
OCarASDSec OCarASDSec	<not calculation="" in="" this="" used=""></not>				
OCarASDSec OCarASDSec	(Not used in this calculation)	(1vot used in this calculation)	Not used in this calculation.	Not used in this calculation.	
OCarACD	• No	• No	• No	• No	
	• Missing	• Missing	• Missing	• Missing	
	Permanent Pacemaker	Permanent Pacemaker	Permanent Pacemaker	Permanent Pacemaker	
OCarACD	OCarACD in (NULL, 1, 2)				
OCarACDLE	Yes, unplanned due to surgical complication				
	• No				
OC ACDIE			issing		
OCar ACDLE	a Nia		Z in (NULL, 2,4)	- NT-	
OCarLasr	• No	• No	• No	• No	

	PART 2 (PROCID 5 through 8)					
Variable Short	MVR + CAB	AVR + MVR	MV Repair	MV Repair + CAB		
Name	(ProcID=5)	(ProcID=6)	(ProcID=7)	(ProcID=8)		
	Missing	• Missing	Missing	 Missing 		
OCarLasr	OCarLasr in (NULL, 2)	OCarLasr in (NULL, 2)	OCarLasr in (NULL, 2)	OCarLasr in (NULL, 2)		
OCPulThromDis		• No				
			issing			
OCPulThromDis	OCPulThromDis in (NULL, 1)					
OCarSubaStenRes			No			
			issing			
OCarSubaStenRes			Res in (NULL, 2)			
OCarSVR			No			
			issing			
OCarSVR			in (NULL, 2)			
OCarCrTx			No			
			issing			
OCarCrTx			in (NULL, 2)			
OCarTrma			No			
			issing			
OCarTrma			in (NULL, 2)			
OCTumor			No			
			issing			
OCTumor			in (NULL, 1)			
OCarOthr		• No				
	• Missing					
OCarOthr			in (NULL, 2)			
VSTCV			No			
			issing			
VSTCV			n (NULL, 2)			
VSTCVMit			No			
	• Missing					
VSTCVMit			t in (NULL, 2)			
VSTCVTri	• No					
	• Missing					
VSTCVTri			in (NULL, 2)			
VSTCVPu			No			
		• M	issing			

	PART 2 (PROCID 5 through 8)					
Variable Short	MVR + CAB	AVR + MVR	MV Repair	MV Repair + CAB		
Name	(ProcID=5)	(ProcID=6)	(ProcID=7)	(ProcID=8)		
VSTCVPu		• VSTCVPu i	n (NULL, 2)			
CCancCase		• N	Го			
		• Mis	sing			
CCancCase		• CCancCase :	in (NULL, 2)			
ONCCarEn		• N	lo			
		 Yes, unplanned due to 	surgical complication			
		• Mis	sing			
ONCCarEn		 ONCCarEn ir 	(NULL, 2, 4)			
ONCOVasc		• No				
		 Yes, unplanned due to 	surgical complication			
		• Mis	sing			
ONCOVasc		• ONCOVasc in	n (NULL, 2, 4)			
ONCOThor		• N	Ю			
		 Yes, unplanned due to 	surgical complication			
		• Mis	~			
ONCOThor		• ONCOThor in	(NULL, 2, 4)			
ONCOther		• No				
		 Yes, unplanned due to 	surgical complication			
		• Mis	sing			
ONCOther		ONCOther in	(NULL, 2, 4)			

The following fields are no longer collected:

AortProcTEVAR – replaced by EndovascProc OpTricus – replaced by VSTrRepair, VSTrReplace, and VSTrValvec