Digital Imaging and Communications in Medicine (DICOM)

Supplement 242: Ultrasound Fetal Cardiac Structured Report Extensions

DICOM Standards Committee

1300 N. 17th Street, Suite 900

Rosslyn, Virginia 22209 USA

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Scope and Field

This supplement to the DICOM Standard introduces new SR template content to address fetal cardiac assessments in echo reports.

Current clinical practice and technology for fetal cardiac assessments using ultrasound have progressed since Sup78 was published, which introduced TID 5220 "Pediatric, Fetal and Congenital Cardiac Ultrasound Reports" and sub-template TID 5228 "Cardiac Ultrasound Fetal Measurement Section". Practice now includes many more measurements beyond visual assessment. For example, additions will address:

- measurements of the ventricles, atria, septa and valves,
- measurements of fetal arrhythmia and hemodynamics,
- assessment of the fetal cardiovascular profile score (CVPS)

Both the fetal (TID 5228) and pediatric (TID 5221) templates contain multiple inclusions of TID 5222 which is parameterized with CIDs 12282 through 12294 to address specific pieces of anatomy and corresponding measurements. Many measurements described for pediatric echo are also potentially relevant for fetal echo, particularly at later stages of fetal development. To that end, TID 5221 is now included in TID 5228, making any of those measurements readily available as needed and appropriate.

Also, CID 12279, which is titled Cardiac Ultrasound Fetal General Measurement, is pruned here based on usage experience to list just general fetal measurements that are specifically relevant to cardiac fetal ultrasound. CID 12005 Fetal Biometry Measurement already covers fetal measurements relevant to a non-cardiac fetal ultrasound. Since CID 12279 is extensible, any existing implementations with unexpected usages will not be invalidated.

References:

- Fetal Echo Guideline Japan (Second edition) 2021 (https://www.jsfc.jp/wp-content/uploads/2021/06/6ca654442ba6819c3183340bba5cf968.pdf)
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5030052/
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6773963/

Changes to NEMA Standards Publication PS3.6

Part 6: Data Dictionary

Add the following UID Values to Part 6 Annex A Table A-3:

TABLE A-3 CONTEXT GROUP UID VALUES

Context UID	Context Identifier	Context Group Name
...	...	…
1.2.840.10008.6.1.1498	**12312**	**Fetal Echocardiography Image View**
1.2.840.10008.6.1.1499	**12313**	**Cardiac Ultrasound Fetal Arrhythmia Measurements**
1.2.840.10008.6.1.1500	**12314**	**Common Fetal Echocardiography Measurements**

Changes to NEMA Standards Publication PS3.16

Part 16: Content Mapping Resource

Modify TID 5220 as shown.

TID 5220 does not have a hierarchical diagram to update.

TID 5220 Pediatric, Fetal and Congenital Cardiac Ultrasound Reports

This Template forms the top of a content tree that allows an ultrasound application to describe the results of a Cardiac Ultrasound imaging procedure. It is instantiated at the root node.

Type: Extensible
Order: Significant
Root: Yes

Table TID 5220. Pediatric, Fetal and Congenital Cardiac Ultrasound Reports

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	DCID 12245 “Cardiac Ultrasound Report Title”	1	M		Root node
2	>	HAS CONCEPT MOD	INCLUDE	DTID 1204 “Language of Content Item and Descendants”	1	M		
3	>	HAS OBS CONTEXT	INCLUDE	DTID 1001 “Observation Context”	1	M		

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
4	>	CONTAINS	CONTAINER	EV (18785-6, LN, "Indications for Procedure")	1	U		
5	>>	CONTAINS	CODE	EV (121071, DCM, "Finding")	1-n	U		DCID 12246 “Cardiac Ultrasound Indication for Study”
6	>>	CONTAINS	TEXT	EV (121071, DCM, "Finding")	1	U		
7	>	CONTAINS	INCLUDE	DTID 3802 “Cardiovascular Patient History”	1	U		
8	>	CONTAINS	INCLUDE	DTID 3602 “Cardiovascular Patient Characteristics”	1	U		
9	>	CONTAINS	INCLUDE	DTID 5225 “Cardiac Ultrasound Fetal Characteristics”	1-n	U		No more than one inclusion per fetus
10	>	CONTAINS	INCLUDE	DTID 5226 “Cardiac Ultrasound Summary Section”	1	U		
11	>	CONTAINS	INCLUDE	DTID 5227 “Cardiac Ultrasound Fetal Summary Section”	1-n	U		No more than one inclusion per fetus
12	>	CONTAINS	CONTAINER	EV (111028, DCM, "Image Library")	1	U		
13	>>	CONTAINS	IMAGE		1-n	M		
14	>	CONTAINS	INCLUDE	DTID 5221 “Cardiac Ultrasound Pediatric Echo Measurement Section”	1	U		
15	>	CONTAINS	INCLUDE	DTID 5228 “Cardiac Ultrasound Fetal Measurement Section”	1-n	UC	For Fetal Report only.	No more than one inclusion per fetus
16	**>**	**CONTAINS**	**INCLUDE**	**DTID 5230 "Fetal Cardiovascular Profile Section"**	**1-n**	**UC**	**For Fetal Report only.**	**No more than one inclusion per fetus**

Content Item Descriptions

Row 3	For Fetal Report, this row establishes the subject context of the mother.
Row 7	For Fetal Report, this row will be the patient history of the mother.
Row 8	For Fetal Report, this row will be the Patient Characteristics for the mother.
Row 10	For Fetal Report, this row will be the Summary Section for the mother.
Row 13	No purpose of reference is specified.
Row 14	**This inclusion of TID 5221 is for pediatric usage. For fetal usage, see Row 9 of TID 5228 where TID 5221 is included and is associated with a specific Fetus Context.**

Modify TID 5228 as shown.

Brings in pediatric echo measurements applicable to fetal echo and adds post-coordinated echo measurements to handle most of the new measurements introduced by this supplement.

TID 5228 Cardiac Ultrasound Fetal Measurement Section

Type: **Extensible**
Order: **Significant**
Root: **No**

Table TID 5228. Cardiac Ultrasound Fetal Measurement Section

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (125016, DCM, "Fetal Measurements")	1	M		
2	>	HAS OBS CONTEXT	INCLUDE	DTID 1008 “Subject Context, Fetus”	1	MC	IF this Template is invoked more than once to describe more than one fetus.	
3	>	CONTAINS	INCLUDE	DTID 300 “Measurement”	1-n	U		$Measurement = DCID 12279 “Cardiac Ultrasound Fetal General Measurement”
4	>	CONTAINS	INCLUDE	DTID 5222 “Pediatric, Fetal and Congenital Cardiac Ultrasound Section”	1-n	U		$SectionSubject = EV (4432005, SCT, "Ductus arteriosus") $MeasType = DCID 12218 “Echocardiography Congenital”
4a	**>**	**CONTAINS**	**INCLUDE**	**DTID 5222 “Pediatric, Fetal and Congenital Cardiac Ultrasound Section”**	**1-n**	**U**		**$SectionSubject = EV (131021, DCM, "Ductus Arteriosus Arch")** **$MeasType = DCID 12218 “Echocardiography Congenital”**

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
4b	**>**	**CONTAINS**	**INCLUDE**	**DTID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section"**	**1-n**	**U**		**$SectionSubject = EV (32672002, SCT, "Descending Thoracic Aorta")** **$MeasType = DCID 12218 "Echocardiography Congenital"**
5	>	CONTAINS	INCLUDE	DTID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section"	1-n	U		$SectionSubject = EV (367624001, SCT, "Ductus venosus") $MeasType = DCID 12218 "Echocardiography Congenital"
6	>	CONTAINS	INCLUDE	DTID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section"	1-n	U		$SectionSubject = EV (50536004, SCT, "Umbilical artery") $MeasType = DCID 12218 "Echocardiography Congenital"
7	>	CONTAINS	INCLUDE	DTID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section"	1-n	U		$SectionSubject = EV (367567000, SCT, "Umbilical vein") $MeasType = DCID 12218 "Echocardiography Congenital"
8	>	CONTAINS	INCLUDE	DTID 5222 "Pediatric, Fetal and Congenital Cardiac Ultrasound Section"	1-n	U		$SectionSubject = EV (17232002, SCT, "Middle cerebral artery") $MeasType = DCID 12218 "Echocardiography Congenital"
9	**>**	**CONTAINS**	**INCLUDE**	**DTID 5221 "Cardiac Ultrasound Pediatric Echo Measurement Section"**	**1**	**U**		
10	**>**	**CONTAINS**	**INCLUDE**	**DTID 5229 "Cardiac Ultrasound Post-Coordinated Measurement Section"**	**1-n**	**U**		**$Measurement=BCID 12314 "Common Fetal Echocardiography Measurements"**

110 **Content Item Descriptions**

Row 4b	**This inclusion of TID 5222 facilitates reporting the PLAS Index (Post-Left Arterial Space) which is based in part on measurements of the descending thoracic aorta.**
Row 9	**This inclusion of TID 5221 facilitates the use of any pediatric echo measurement(s) appropriate for fetal assessment. Some measurements might only be appropriate for late stage fetal assessment. None of the TID 5221 content is inherently pediatric-specific.**
Row 10	**This row permits inclusion of section containers with one or more fully post-coordinated echo measurements.**

Add TID 5229 for a section of Post-Coordinated Echo Measurements

TID 5229 Cardiac Ultrasound Post-Coordinated Measurement Section

Table TID 5229. Parameters

Parameter Name	Parameter Usage
$Measurement	Coded term or Context Group for Concept Name of measurement

Type: Extensible
Order: Significant
Root: No

Table TID 5229. Cardiac Ultrasound Post-Coordinated Measurement Section

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (59776-5, LN, "Findings")	1	M		
2	>	CONTAINS	INCLUDE	DTID 5302 "Post-Coordinated Echo Measurement"	1-n	U		$Measurement=$Measurement

Content Item Descriptions

Row 2	Each inclusion of this row is one fully post-coordinated echo measurement. See PS3.17 Annex DDDDD, Table DDDDD-1 Examples of Post-Coordination of Fetal Cardiac Ultrasound Measurements for a list of common fetal cardiac measurements and the corresponding values of post-coordinated elements of TID 5302. The use of TID 5302 is not limited to the examples in Table DDDDD-1. The examples are intended to show how some common measurements are constructed and to understand common patterns.

Add TID 5230 for a Fetal Cardiovascular Profile Score Section (following the pattern of TID 5009 Fetal Biophysical Profile Section)

TID 5230 Fetal Cardiovascular Profile Section

This Template encodes scoring observations for fetal cardiovascular well-being evaluation and a summary Cardiovascular Profile Score (CVPS) as described by Makikallio et al, Human fetal cardiovascular profile score and neonatal outcome in intrauterine growth restriction. Ultrasound Obstet Gynecol 2008; 31: 48-54 (https://obgyn.onlinelibrary.wiley.com/doi/10.1002/uog.5210)

Type: Extensible
Order: Significant
Root: No

Table TID 5230. Fetal Cardiovascular Profile Section

	NL	Rel with Parent	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1			CONTAINER	EV (131030, DCM, "Fetal Cardiovascular Profile")	1	M		
2	>	HAS OBS CONTEXT	INCLUDE	DTID 1008 “Subject Context, Fetus”	1	MC	IF this Template is invoked more than once to describe more than one fetus.	
3	>	CONTAINS	NUM	EV (131031, DCM, "Hydrops Fetalis Score")	1	MC	XOR Rows 4, 5, 6, 7	UNITS = DT ({0:2}, UCUM, "range 0:2")
4	>	CONTAINS	NUM	EV (131032, DCM, "Cardiothoracic Size Ratio Score")	1	MC	XOR Rows 3, 5, 6, 7	UNITS = DT ({0:2}, UCUM, "range 0:2")
5	>	CONTAINS	NUM	EV (131033, DCM, "Cardiac Function Score")	1	MC	XOR Rows 3, 4, 6, 7	UNITS = DT ({0:2}, UCUM, "range 0:2")
6	>	CONTAINS	NUM	EV (131034, DCM, "Venous Doppler Score")	1	MC	XOR Rows 3, 4, 5, 7	UNITS = DT ({0:2}, UCUM, "range 0:2")
7	>	CONTAINS	NUM	EV (131035, DCM, "Arterial Doppler Score")	1	MC	XOR Rows 3, 4, 5, 6	UNITS = DT ({0:2}, UCUM, "range 0:2")
8	>	CONTAINS	NUM	EV (131036, DCM, "Fetal Cardiovascular Profile Score")	1	U		

Content Item Descriptions

Rows 3, 4, 5, 6, 7	The numeric profile scores shall have a value of 0, 1, or 2 only.
Row 6	The score is based on observations of the umbilical vein and ductus venosus.
Row 7	The score is based on observations of the umbilical artery.
Row 8	The sum of Rows 3-7. The range is from 0 to the maximum possible score according the items scored in Rows 3-7.

Modify CID 12226 to include Fetal Echocardiography Image Views CID

CID 12226 Echocardiography Image View

Resources: **HTML | FHIR JSON | FHIR XML | IHE SVS XML**
Keyword: **EchocardiographyImageView**
FHIR Keyword: **dicom-cid-12226-EchocardiographyImageView**
Type: **Extensible**
Version: **~~20211112~~20240920**
UID: **1.2.840.10008.6.1.617**

Table CID 12226. Echocardiography Image View

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
Include CID 12312 "Fetal Echocardiography Image View"				
SCT	399232001	Apical two chamber	G-A19B	C1302267
…				

Modify CID 12227 to add two methods related to how the measurements are taken.

CID 12227 Echocardiography Measurement Method

Resources: **HTML | FHIR JSON | FHIR XML | IHE SVS XML**
Keyword: **EchocardiographyMeasurementMethod**
FHIR Keyword: **dicom-cid-12227-EchocardiographyMeasurementMethod**
Type: **Extensible**
Version: **~~20211112~~20240920**
UID: **1.2.840.10008.6.1.618**

Table CID 12227. Echocardiography Measurement Method

Coding Scheme Designator	Code Value	Code Meaning
Include CID 12228 "Echocardiography Volume Method"		
Include CID 12229 "Echocardiography Area Method"		
Include CID 12230 "Gradient Method"		
Include CID 12231 "Volume Flow Method"		
Include CID 12232 "Myocardium Mass Method"		
Include CID 12310 "Myocardial Strain Method"		
DCM	**131019**	**Inlet Included**
DCM	**131020**	**Free Cord Loop Method**
DCM	125316	Directly measured

Modify CID 12264 to include 12313 Fetal Arrhythmia Measurements (which Row 1 of TID 5221 pairs with CID 12282 locations, supporting these measures being performed in places like the Superior Vena Cava)

CID 12264 Cardiac Ultrasound Venous Return Systemic Measurement

Resources: **HTML | FHIR JSON | FHIR XML | IHE SVS XML**
Keyword: **CardiacUltrasoundVenousReturnSystemicMeasurement**

FHIR Keyword: **dicom-cid-12264-CardiacUltrasoundVenousReturnSystemicMeasurement**
Type: **Extensible**
Version: **~~20100317~~20240920**
UID: **1.2.840.10008.6.1.845**

Table CID 12264. Cardiac Ultrasound Venous Return Systemic Measurement

Coding Scheme Designator	Code Value	Code Meaning
Include CID 12220 "Echocardiography Common Measurement"		
Include CID 12222 "Orifice Flow Property"		
Include CID 12239 "Cardiac Output Property"		
Include CID 12250 "Cardiac Ultrasound Common Linear Measurement"		
Include CID 12252 "Cardiac Ultrasound Cardiac Function"		
Include CID 12253 "Cardiac Ultrasound Area Measurement"		
Include CID 12254 "Cardiac Ultrasound Hemodynamic Measurement"		
Include CID 3612 "Blood Velocity Measurement"		
Include CID 12313 "Cardiac Ultrasound Fetal Arrhythmia Measurements"		

Modify CID 12271 to include 12313 Fetal Arrhythmia Measurements (which Row 8 of TID 5221 pairs with CID 12288 locations, supporting these measures being performed at the ventricles and their outflow tracts).

CID 12271 Cardiac Ultrasound Outflow Tract Measurement

Resources: **HTML | FHIR JSON | FHIR XML | IHE SVS XML**
Keyword: **CardiacUltrasoundOutflowTractMeasurement**
FHIR Keyword: **dicom-cid-12271-CardiacUltrasoundOutflowTractMeasurement**
Type: **Extensible**
Version: **~~20100317~~20240920**
UID: **1.2.840.10008.6.1.852**

Table CID 12271. Cardiac Ultrasound Outflow Tract Measurement

Coding Scheme Designator	Code Value	Code Meaning
Include CID 12257 "Cardiac Ultrasound Left Ventricle Measurement"		
Include CID 12258 "Cardiac Ultrasound Right Ventricle Measurement"		
Include CID 12262 "Cardiac Ultrasound Pulmonary Valve Measurement"		

Coding Scheme Designator	Code Value	Code Meaning
Include CID 12270 "Cardiac Ultrasound Aortic Valve Measurement"		
Include CID 12313 "Cardiac Ultrasound Fetal Arrhythmia Measurements"		

Modify CID 12274 to include Left Atrium Descending Aorta Distance measurement and PLAS Index.

Note: PLAS Index is used as a diagnostic marker for Total Anomalous Pulmonary Venous Connection (TAPVC), a rare congenital heart defect. It was originally added to CID 12218 Echocardiography Congenital Anomaly Measurement, however to better align with the relevant anatomical site pairings it fits better here along with 131003 which is one of the two components of the PLAS Index.

CID 12274 Cardiac Ultrasound Aorta Measurement

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Keyword: CardiacUltrasoundAortaMeasurement
FHIR Keyword: dicom-cid-12274-CardiacUltrasoundAortaMeasurement
Type: Extensible
Version: ~~20100317~~20240920
UID: 1.2.840.10008.6.1.855

Table CID 12274. Cardiac Ultrasound Aorta Measurement

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
…				
DCM	**131003**	**Left Atrium-Descending Aorta Distance**		
DCM	**131004**	**Post-Left Atrium Space Index**		

Modify CID 12279 to match its intent/title by removing items not commonly recognized as being relevant to a cardiac ultrasound of a fetus.

All the retained codes are either measurements of cardiac/vascular features, or measurements commonly used to provide context for cardiac measurements, e.g. by providing a fetal body size reference

CID 12004 contains ratios used elsewhere for fetal growth tracking, not heart assessment.

CID 12279 Cardiac Ultrasound Fetal General Measurement

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Keyword: CardiacUltrasoundFetalGeneralMeasurement
FHIR Keyword: dicom-cid-12279-CardiacUltrasoundFetalGeneralMeasurement
Type: Extensible
Version: ~~20100317~~20240920
UID: 1.2.840.10008.6.1.859

Table CID 12279. Cardiac Ultrasound Fetal General Measurement

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
~~*Include CID 12004 "Fetal Biometry Ratio"*~~				
LN	11988-3	Thoracic Circumference		C0552104
LN	33068-8	Thoracic Area		C1315539
LN	59073-7	Cardiac Circumference, transverse by US		C2923390
LN	59074-5	Cardiothoracic Circumference Ratio		C2923392
LN	59075-2	Cardiac Cross-sectional Area, transverse by US		C2923394
LN	59076-0	Cardiothoracic Area Ratio		C2923396
~~**LN**~~	~~**11820-8**~~	~~**Biparietal Diameter**~~		~~**C0551937**~~
~~**LN**~~	~~**33069-6**~~	~~**Nuchal Translucency**~~		~~**C1315540**~~
~~**LN**~~	~~**11963-6**~~	~~**Femur Length**~~		~~**C0552080**~~
~~**LN**~~	~~**11979-2**~~	~~**Abdominal Circumference**~~		~~**C0552095**~~
~~**LN**~~	~~**11818-2**~~	~~**Anterior-Posterior Abdominal Diameter**~~		~~**C0551935**~~
~~**LN**~~	~~**11819-0**~~	~~**Anterior-Posterior Trunk Diameter**~~		~~**C0551936**~~
~~**LN**~~	~~**11824-0**~~	~~**BPD area corrected**~~		~~**C0551941**~~
~~**LN**~~	~~**11860-4**~~	~~**Cisterna Magna Length**~~		~~**C0551977**~~
~~**LN**~~	~~**11984-2**~~	~~**Head Circumference**~~		~~**C0552100**~~
~~**LN**~~	~~**11851-3**~~	~~**Occipital-Frontal Diameter**~~		~~**C0551968**~~
~~**LN**~~	~~**11862-0**~~	~~**Transverse Abdominal Diameter**~~		~~**C0551979**~~
~~**LN**~~	~~**11863-8**~~	~~**Transverse Cerebellar Diameter**~~		~~**C0551980**~~
LN	11864-6	Transverse Thoracic Diameter		C0551981
LN	59077-8	Foramen Ovale Diameter/Aortic Root Diameter		C2923398
LN	59078-6	Left Ventricle/Right Ventricle Diameter Ratio		C2923400
SCT	249192005	Number of umbilical arteries	F-00AA0	C0426250

Modify CID 12290 to add several codes

CID 12290 Cardiac Ultrasound Pulmonary Artery Finding Site

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Keyword: CardiacUltrasoundPulmonaryArteryFindingSite
FHIR Keyword: dicom-cid-12290-CardiacUltrasoundPulmonaryArteryFindingSite
Type: Extensible
Version: ~~20100317~~20240920
UID: 1.2.840.10008.6.1.870

Table CID 12290. Cardiac Ultrasound Pulmonary Artery Finding Site

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
SCT	45341000	Pulmonary Trunk	T-44100	C0034052
SCT	**50408007**	**Left pulmonary artery**	**T-44400**	**C0226069**
SCT	**78480002**	**Right pulmonary artery**	**T-44200**	**C0226054**
SCT	81040000	Pulmonary Artery	T-44000	C0034052
SCT	443096004	Aorta to Pulmonary Artery Connection	T-D0877	C2732457
SCT	**4432005**	**Ductus arteriosus**	**T-F6845**	**C0013273**

Modify CID 12291 to add two codes

CID 12291 Cardiac Ultrasound Aorta Finding Site

Resources: **HTML | FHIR JSON | FHIR XML | IHE SVS XML**
Keyword: **CardiacUltrasoundAortaFindingSite**
FHIR Keyword: **dicom-cid-12291-CardiacUltrasoundAortaFindingSite**
Type: **Extensible**
Version: ~~**20170914**~~**20240920**
UID: **1.2.840.10008.6.1.871**

Table CID 12291. Cardiac Ultrasound Aorta Finding Site

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
SCT	**13418002**	**Left ventricle outflow tract**	**T-32650**	**C0225912**
SCT	**34202007**	**Aortic Valve**	**T-35400**	**C0003501**
SCT	8128003	Root of Aorta	T-42110	C0549113
SCT	81128002	Structure Sinus of Valsalva	T-42200	C0037197
SCT	36371001	Left Sinus of Valsalva	T-42220	C0226017
SCT	89093001	Right Sinus of Valsalva	T-42210	C0226016
SCT	24865005	Non-coronary Sinus	T-42230	C0226018
SCT	443167003	Aortic Sinotubular Junction	T-42102	C2733424
SCT	54247002	Ascending Aorta	T-42100	C0003956
SCT	57034009	Aortic Arch	T-42300	C0003489
SCT	88593004	Aortic Isthmus	T-42310	C0226019
SCT	7305005	Coarctation of Aorta	D4-32014	C0003492
SCT	**281130003**	**Descending Aorta**	**T-D0765**	**C0011666**
SCT	**32672002**	**Descending Thoracic Aorta**	**T-42400**	**C3163626**

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
SCT	113262008	Thoracic Aorta	T-42070	C1522460
SCT	7832008	Abdominal Aorta	T-42500	C0003484
SCT	1918003	Supra Renal Aorta	T-42510	C0226024
SCT	28205006	Infra-Renal Aorta	T-42520	C0226025
SCT	12691009	Innominate Artery	T-46010	C0006094
SCT	65355003	Right Common Carotid Artery	T-45110	C0226086
SCT	29700009	Right Subclavian Artery	T-46110	C0226261
SCT	113263003	Left Common Carotid Artery	T-45120	C0226087
SCT	85235006	Left Subclavian Artery	T-46120	C0226262

Modify CID 12304 to add codes
https://dicom.nema.org/medical/dicom/current/output/chtml/part16/sect_CID_12304.html

CID 12304 Echo Measured Property

The Units column contains the proper UCUM representation of the recommended units for the measured property.

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Keyword: EchoMeasuredProperty
FHIR Keyword: dicom-cid-12304-EchoMeasuredProperty
Type: Extensible
Version: ~~2023111~~20240920
UID: 1.2.840.10008.6.1.1145

Table CID 12304. Echo Measured Property

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
…				
SCT	82799009	Cardiac Output	F-32100	C0007165
LN	12008-9	Pulsatility Index		C0552113
LN	12023-8	Resistivity Index		C0552128
DCM	131013	Peak Velocity Index		
…				

Modify CID 12305 to add codes
https://dicom.nema.org/medical/dicom/current/output/chtml/part16/sect_CID_12305.html

CID 12305 Basic Echo Anatomic Site

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Keyword: BasicEchoAnatomicSite
FHIR Keyword: dicom-cid-12305-BasicEchoAnatomicSite
Type: Extensible
Version: ~~20210904~~20240920
UID: 1.2.840.10008.6.1.1146

Table CID 12305. Basic Echo Anatomic Site

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
…				
SCT	80891009	Heart	T-32000	C0018787
SCT	27706005	Left Pulmonary Vein	T-48502	C0226670
SCT	70238003	Left Ventricle Inflow Tract	T-32640	C0225911
SCT	91539005	Right Pulmonary Vein	T-48501	C0226669
SCT	8017000	Right Ventricle Inflow Tract	T-32540	C0225891
SCT	48345005	Superior vena cava	T-48610	C0042459
…				

Add a new CID for Fetal Cardiac Views to Part 16 Annex B:

CID 12226. Echocardiography Image View incorporates too much (maternal) anatomy on top of the heart orientation

CID 27. Basic Cardiac View contains 3 codes (which are relevant) but our additions are likely not relevant to the existing NM usage of the Basic View

CID 12312 Fetal Echocardiography Image View

Resources: HTML | FHIR JSON | FHIR XML | IHE SVS XML
Keyword: FetalEchocardiographyImageView
FHIR Keyword: dicom-cid-12312-FetalEchocardiographyImageView
Type: Extensible
Version: 20240920
UID: 1.2.840.10008.6.1.1498

Table CID 12312. Fetal Echocardiography Image View

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
SCT	103340004	Short axis	G-A186	C0522488
SCT	131185001	Vertical Long Axis	G-A18A	C1295721
SCT	131186000	Horizontal Long Axis	G-A18B	C1295722

DCM	131029	Four chamber view		
DCM	131022	Aortic arch view		
DCM	131023	Oblique short axis view at ductus arteriosus		
DCM	131024	Short axis view at pulmonary artery level		
DCM	131025	Three vessel view		
DCM	131026	Three vessel and trachea view		
DCM	131028	Left ventricular outflow tract view		
SCT	399195005	Right Ventricular Outflow Tract View	G-039D	C1275831

Add a new CID for Fetal Arrhythmia Measurements to Part 16 Annex B:

CID 12313 Cardiac Ultrasound Fetal Arrhythmia Measurements

Resources: **HTML | FHIR JSON | FHIR XML | IHE SVS XML**
Keyword: **CardiacUltrasoundFetalArrhythmiaMeasurements**
FHIR Keyword: **dicom-cid-12313-CardiacUltrasoundFetalArrhythmiaMeasurements**
Type: **Extensible**
Version: **20240920**
UID: **1.2.840.10008.6.1.1499**

Table CID 12313. Cardiac Ultrasound Fetal Arrhythmia Measurements

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
MDC	2:16020	Atrial Heart Rate		
MDC	2:16016	Ventricular Heart Rate		
DCM	131002	Atrioventricular time interval		
DCM	131001	Ventriculoatrial time interval		

Add a new CID for Common Fetal Echocardiography Measurements to Part 16 Annex B:

CID 12314 Common Fetal Echocardiography Measurements

Resources: **HTML | FHIR JSON | FHIR XML | IHE SVS XML**
Keyword: **CommonFetalEchocardiographyMeasurements**
FHIR Keyword: **dicom-cid-12314-CommonFetalEchocardiographyMeasurements**
Type: **Extensible**
Version: **20240920**
UID: **1.2.840.10008.6.1.1500**

Table CID 12314. Common Fetal Echocardiography Measurements

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
LN	79917-1	PV S-wave peak velocity		

LN	79916-3	PV D-wave peak velocity		
DCM	131062	IVC S-wave peak velocity		
DCM	131060	Mitral valve annulus diameter		
DCM	131061	Tricuspid valve annulus diameter		
DCM	131017	Right ventricular inlet length		
DCM	131018	Left ventricular inlet length		
LN	80066-4	Mitral a-wave peak velocity		
LN	79923-9	Tricuspid a-wave peak velocity		
DCM	131063	IVC a-wave peak velocity		
LN	80070-6	Mitral E-wave peak velocity		
LN	79925-4	Tricuspid E-wave peak velocity		
LN	78185-6	Mitral septal e' peak velocity		
LN	81396-4	Mitral septal a' peak velocity		
LN	78187-2	Mitral septal s' peak velocity		
LN	78186-4	Mitral lateral e' peak velocity		
LN	81397-2	Mitral lateral a' peak velocity		
LN	78188-0	Mitral lateral s' peak velocity		
LN	80030-0	LVOT VTI		
LN	80089-6	RVOT VTI		
LN	8769-2	LV Stroke Volume		
LN	8779-1	RV Stroke Volume		
LN	8735-3	Left Ventricle Cardiac Output		
DCM	131053	Right Ventricle Cardiac Output		
DCM	131054	Combined Cardiac Output		
LN	18013-3	Descending Aorta Diameter		
LN	12018-8	UA Resistivity Index		
LN	12012-1	Fetal ACA Resistivity Index		
LN	12014-7	Fetal MCA Resistivity Index		
LN	12003-0	UA Pulsatility Index		
LN	11999-0	MCA Pulsatility Index		
DCM	131014	DV Pulsatility Index in Veins		
DCM	131015	DV Peak Velocity Index in Veins		
DCM	131050	PV VTI Forward		
DCM	131051	PV VTI Reverse		
DCM	131052	PV VTIR/VTIF ratio		
LN	78189-8	Mitral Septal E/e' ratio		
LN	78190-6	Mitral Lateral E/e' ratio		

DCM	131009	Cerebroplacental ratio		
DCM	131010	Umbilicocerebral ratio		
DCM	131011	IVC preload index		
DCM	131012	IVC S/a		

Add the following Definitions to Annex D

310 **DICOM Code Definitions (Coding Scheme Designator "DCM" Coding Scheme Version "01")**

Code Value	Code Meaning	Definition	Notes
121206	Distance	A one dimensional, or linear, numeric measurement **between two points or features**.	
…			
131001	**Ventriculoatrial time interval**	**Ventriculoatrial time interval (VA time), defined as the interval between the onset of ventricular systole and the onset of atrial systole.**	**Recommended for assessment of Fetal arrhythmia per Fetal Echo Guideline Japan – Second edition 2021.** **Commonly measured by doppler using a view aligned with a pair of locations: the Superior Vena Cava and the Ascending Aorta, or the Left Ventricular Inflow Tract and the Left Ventricular Outflow Tract, or a Pulmonary Artery and Pulmonary Vein. In a coded measurement, when only one finding location is recorded, the partner location is implicit.**
131002	**Atrioventricular time interval**	**Atrioventricular time interval (AV time or AVI), defined as the interval between the onset of atrial systole and the onset of ventricular systole.**	**Commonly measured by doppler using a view aligned with a pair of locations: the Superior Vena Cava (SVC) and the Ascending Aorta, or the Left Ventricular Inflow Tract and the Left Ventricular Outflow Tract, or a Pulmonary Artery and a Pulmonary Vein. In a coded measurement, when only one finding location is recorded, the partner location is implicit.**

131003	Left Atrium-Descending Aorta Distance	The shortest distance (LD) between any point on the inside of the atrium wall and any point on the outside of the descending thoracic aorta wall measured in a four-chamber view of the heart.	
131004	Post-Left Atrium Space Index	Post-Left Atrium Space (PLAS) Index is the distance between the left atrium and the descending thoracic aorta divided by the diameter of the descending thoracic aorta, where both measurements are taken in the same view (thus defining the point in the descending thoracic aorta for the diameter measurement). Reference: http://jpccs.jp/10.9794/jspccs.32.387/data/index.html	Used in fetal echo for diagnosis of isolated Total Anomalous Pulmonary Venous Connection (TAPVC).
131009	Cerebroplacental ratio	The pulsatility index at the middle cerebral artery of the fetus divided by the pulsatility index at the umbilical artery. Abbreviated CPR.	
131010	Umbilicocerebral ratio	The pulsatility index at the umbilical artery divided by the pulsatility index at the middle cerebral artery of the fetus.	
131011	IVC preload index	The ratio of the peak retrograde flow during the A-wave to the peak forward flow during the S-wave, as measured at the inferior vena cava using pulsed-wave doppler. Abbreviated a/S.	https://pubmed.ncbi.nlm.nih.gov/2130842/ (1990) https://obgyn.onlinelibrary.wiley.com/doi/full/10.1002/uog.142
131012	IVC S/a	The ratio of the peak forward flow during the S-wave to the peak retrograde flow during the A-wave, as measured at the inferior vena cava using pulsed-wave doppler. This is the inverse of the Preload index.	
131013	Peak Velocity Index	A blood flow index calculated by subtracting the peak retrograde flow during the A-wave from the peak forward flow during the S-wave, then dividing by the peak forward flow during the D-wave, i.e., (S-a)/D.	https://obgyn.onlinelibrary.wiley.com/doi/10.1002/uog.902

131014	DV Pulsatility Index in Veins	The pulsatility index measured in the ductus venosus during the full cardiac cycle in pulsed doppler mode in any view. Abbreviated PIV.	
131015	DV Peak Velocity Index in Veins	The peak velocity index measured in the ductus venosus during the full cardiac cycle in pulsed doppler mode in any view. Abbreviated PVIV.	
131017	Right ventricular inlet length	The length of the right ventricle measured at end diastole in 2D mode using a method that includes the inlet portion of the chamber in any view.	
131018	Left ventricular inlet length	The length of the left ventricle measured at end diastole in 2D mode using a method that includes the inlet portion of the chamber in any view.	
131019	Inlet Included	A method of measuring a cardiac chamber length that includes the inlet portion of the chamber in the length.	
131020	Free Cord Loop Method	A method of measuring hemodynamics in the umbilical cord by taking the measurement in a free loop of the cord. A free loop is a portion of the umbilical cord that is not attached to the fetal body or the placenta and is instead floating freely within the amniotic fluid.	
131021	Ductus Arteriosus Arch	The ductal arch formed by the ductus arteriosus as it travels from its origin at the pulmonary artery to the point of entry into the descending aorta.	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5030054/pdf/AJUM-16-168.pdf
131022	Aortic arch view	A planar view of the heart showing the aortic valve, ascending aorta, aortic arch, descending aorta and inferior vena cava.	
131023	Oblique short axis view at ductus arteriosus	A planar oblique short-axis view of the heart showing the pulmonary trunk (main pulmonary artery, right pulmonary artery) and the ductus arteriosus.	

131024	Short axis view at pulmonary artery level	A planar short-axis view of the heart showing the pulmonary valve, main pulmonary artery, right and left pulmonary arteries.	
131025	Three vessel view	An axial planar view of the heart showing the main pulmonary artery, ascending aorta in cross-section, and superior vena cava (SVC) in cross-section. One or both branch pulmonary arteries may also be included. Abbreviated 3VV.	
131026	Three vessel and trachea view	An axial planar view of the heart showing the trachea and the aortic and ductal arches converging to form the proximal descending thoracic aorta. Abbreviated 3VT.	
131028	Left ventricular outflow tract view	An axial planar view of the heart showing the subaortic area, aortic valve, supravalvular region, and ascending aorta.	
131029	Four chamber view	An axial planar view of the heart showing both ventricles and both atria. The view does not necessarily include the apex of the heart.	
131030	Fetal Cardiovascular Profile	Report section for assessment of cardiovascular observations that evaluate fetal well-being	
131031	Hydrops Fetalis Score	A point-based assessment of abnormal fluid accumulation in fetal body areas. This is a component of the Fetal Cardiovascular Profile Score.	
131032	Cardiothoracic Size Ratio Score	A point-based assessment of heart size relative to thoracic size based on observations of the circumferences or areas. This is a component of the Fetal Cardiovascular Profile Score.	
131033	Cardiac Function Score	A point-based assessment of cardiac function based on observations of valve inflow and regurgitation patterns and ventricular shortening. This is a component of the Fetal Cardiovascular Profile Score.	

131034	Venous Doppler Score	A point-based assessment of venous flow based on Doppler observations of the umbilical vein and ductus venosus. This is a component of the Fetal Cardiovascular Profile Score.	
131035	Arterial Doppler Score	A point-based assessment of arterial flow based on Doppler observations of the umbilical artery. This is a component of the Fetal Cardiovascular Profile Score.	
131036	Fetal Cardiovascular Profile Score	A point-based score that sums the scores of five component assessments of cardiovascular observations to evaluate fetal well-being according to Makikallio et al, Human fetal cardiovascular profile score and neonatal outcome in intrauterine growth restriction. Ultrasound Obstet Gynecol 2008; 31: 48-54 https://obgyn.onlinelibrary.wiley.com/doi/10.1002/uog.5210 Abbreviated CVPS.	
131050	PV VTI Forward	The velocity time integral measured in the pulmonary vein for the antegrade flow during the full cycle in pulsed doppler mode in any view. Forward flow occurs during the D-wave and the S-wave.	
131051	PV VTI Reverse	The velocity time integral measured in the pulmonary vein for the retrograde flow during the A-wave in pulsed doppler mode in any view.	
131052	PV VTIR/VTIF ratio	The ratio of the retrograde velocity time integral to the antegrade velocity time integral at the pulmonary vein.	
131053	Right Ventricle Cardiac Output	The volume rate of blood output by the right ventricle derived from the right ventricle stroke volume and heart rate. Abbreviated RVCO.	
131054	Combined Cardiac Output	The volume rate of blood output by the heart derived from the cardiac output of the left and right ventricles. Abbreviated CCO.	

131060	**Mitral valve annulus diameter**	**The diameter of the annulus of the mitral valve measured during diastole in 2D mode in a short axis view at the level of the mitral valve.**	
131061	**Tricuspid valve annulus diameter**	**The diameter of the annulus of the tricuspid valve measured during diastole in 2D mode in a short axis view at the level of the mitral valve.**	
131062	**IVC S-wave peak velocity**	**The peak velocity measured in the inferior vena cava during the S-wave in pulsed doppler mode in any view.**	
131063	**IVC a-wave peak velocity**	**The peak velocity measured in the inferior vena cava during the a-wave in pulsed doppler mode in any view.**	

Modify PS3.16 Annex G as shown

Table G-1. English Code Meanings of Selected Codes

Coding Scheme Designator	Code Value	Code Meaning
	…	
LN	12023-8	Resistivity Index
		Resistive Index
		Pourcelot Index
	…	

Add PS3.17 Annex DDDDD TID 5229 for a section of Post-Coordinated Echo Measurements

Annex DDDDD Post-coordinated Fetal Cardiac Ultrasound Measurement Examples (Informative)

Encoding a wide range of measurements in a predictable, organized pattern can be achieved with well-managed post-coordination. To provide report sections containing such post-coordinated measurements, TID 5228 Cardiac Ultrasound Fetal Measurement Section includes TID 5229 Cardiac Ultrasound Post-Coordinated Measurement Section which in turn includes TID 5302 Post-coordinated Echo Measurement. Table DDDDD-1 provides examples of common fetal cardiac ultrasound measurements and demonstrates how the post-coordinated elements in key rows of TID 5302 can be populated to encode them.

Row 1 of TID 5302 contains a fully pre-coordinated code which encompasses the details in the subsequent rows of TID 5302. Table DDDDD-1 has a Pre-Coordinated column which offers such a pre-

coordinated code value for the measurement. If a code is not present, the recording system is responsible for finding or creating a code, as described in the Content Item Descriptions for TID 5302 Row 1.

Table DDDDD-1. Examples of Post-Coordination of Fetal Cardiac Ultrasound Measurements

Nominal Measurement	Pre-Coordinated	Key Post-Coordinated Elements of TID 5302				Notes
		Finding Site	Measured Property	Image Mode	Cardiac Cycle Point	
TID 5302 – Row 1 (Code Meaning)	**Row 1 (Coding Scheme Designator: Code Value)**	**Row 8**	**Row 10**	**Row 13**	**Row 15**	
Measurement Type = Direct						
PV S-wave peak velocity	LN: 79917-1	(430757002, SCT, "Pulmonary Vein")	(20355-4, LN, "Peak Blood Velocity")	PW Dop	(444371003, SCT, "S-wave")	
PV D-wave peak velocity	LN: 79916-3	Pulmonary Vein	Peak Blood Vel	PW Dop	D-wave	
IVC S-wave peak velocity	DCM: 131062	Inferior Vena Cava	Peak Blood Flow	PW Dop	S-wave	
Mitral valve annulus diameter	DCM: 131060	Mitral Valve Annulus	Diameter	2D	Diastole	
Tricuspid valve annulus diameter	DCM: 131061	Tricuspid Valve Annulus	Diameter	2D	Diastole	
Right ventricular inlet length	DCM: 131017	Right Ventricle	Length	2D	End Diastole	Method=Inlet Included
Left ventricular inlet length	DCM: 131018	Left Ventricle	Length	2D	End Diastole	Method=Inlet Included
Mitral a-wave peak velocity	LN: 80066-4	Mitral Valve	Peak Blood Vel	PW Dop	A-wave	
Tricuspid a-wave peak velocity	LN: 79923-9	Tricuspid Valve	Peak Blood Vel	PW Dop	A-wave	
IVC a-wave peak velocity	DCM: 131063	Inferior Vena Cava	Peak Blood Flow	PW Dop	A-wave	
Mitral E-wave peak velocity	LN: 80070-6	Mitral Valve	Peak Blood Vel	PW Dop	E-wave	
Tricuspid E-wave peak velocity	LN: 79925-4	Tricuspid Valve	Peak Blood Vel	PW Dop	E-wave	
Mitral septal e' peak velocity	LN: 78185-6	Medial Mitral Annulus	Peak Tissue Vel	TDI	E-wave	
Mitral septal a' peak velocity	LN: 81396-4	Medial Mitral Annulus	Peak Tissue Vel	TDI	A-wave	
Mitral septal s' peak velocity	LN: 78187-2	Medial Mitral Annulus	Peak Tissue Vel	TDI	S-wave	

Mitral lateral e' peak velocity	LN: 78186-4	Lateral Mitral Annulus	Peak Tissue Vel	TDI	E-wave	
Mitral lateral a' peak velocity	LN: 81397-2	Lateral Mitral Annulus	Peak Tissue Vel	TDI	A-wave	
Mitral lateral s' peak velocity	LN: 78188-0	Lateral Mitral Annulus	Peak Tissue Vel	TDI	S-wave	
LVOT VTI	LN: 80030-0	LV Outflow Tract	VTI	PW Dop	Systole	Flow=Antegrade
RVOT VTI	LN: 80089-6	RV Outflow Tract	VTI	PW Dop	Systole	Flow=Antegrade
LV Stroke Volume	LN: 8769-2	Left Ventricle	Stroke Volume	PW Dop	Systole	Method=Doppler Volume Flow
RV Stroke Volume	LN: 8779-1	Right Ventricle	Stroke Volume	PW Dop	Systole	Method=Doppler Volume Flow
Left Ventricle Cardiac Output	LN: 8735-3	Left Ventricle	Cardiac Output	PW Dop	Systole	To index by fetal weight, Measurement Type would be Indexed, and Measurement Divisor would be Fetal Weight, the value of which would be recorded elsewhere.
Right Ventricle Cardiac Output	DCM: 131053	Right Ventricle	Cardiac Output	PW Dop	Systole	
Combined Cardiac Output	DCM: 131054	Heart	Cardiac Output	PW Dop	Systole	
Descending Aorta Diameter	LN: 18013-3	Descending Aorta	Diameter	B-mode	End Systole	
UA Resistivity Index	LN: 12018-8	(50536004, SCT, "Umbilical artery")	Resistivity index	PW Dop	Full Cycle	Method = Free Cord Loop
Fetal ACA Resistivity Index	LN: 12012-1	(60176003, SCT, "Anterior Cerebral Artery")	Resistivity index	PW Dop	Full Cycle	
Fetal MCA Resistivity Index	LN: 12014-7	(17232002, SCT, "Middle Cerebral Artery")	Resistivity index	PW Dop	Full Cycle	
UA Pulsatility Index	LN: 12003-0	(50536004, SCT, "Umbilical artery")	Pulsatility Index	PW Dop	Full Cycle	Method = Free Cord Loop
MCA Pulsatility Index	LN: 11999-0	(17232002, SCT, "Middle Cerebral Artery")	Pulsatility Index	PW Dop	Full Cycle	

DV Pulsatility Index in Veins	DCM: 131014	(367624001, SCT, "Ductus Venosus")	Pulsatility Index	PW Dop	Full Cycle	
DV Peak Velocity Index in Veins	DCM: 131015	(367624001, SCT, "Ductus Venosus")	Peak Velocity Index	PW Dop	Full Cycle	
PV VTI Forward	DCM: 131050	Pulmonary Vein	VTI	PW Dop	Full Cycle	Flow=Antegrade
PV VTI Reverse	DCM: 131051	Pulmonary Vein	VTI	PW Dop	A-Wave	Flow=Retrograde
Measurement Type = Ratio						
PV VTIR/VTIF ratio	DCM: 131052	Pulmonary Vein	VTI	PW Dop	A-Wave	Measurement Divisor = PV VTI Forward
Mitral Septal E/e' ratio	LN: 78189-8	Mitral Valve	Peak Blood Vel	PW Dop	E-Wave	Measurement Divisor = Mitral Septal e' peak velocity
Mitral Lateral E/e' ratio	LN: 78190-6	Mitral Valve	Peak Blood Vel	PW Dop	E-Wave	Measurement Divisor = Mitral Lateral e' peak velocity
Cerebroplacental ratio	DCM: 131009	(17232002, SCT, "Middle Cerebral Artery")	Pulsatility Index	PW Dop	Full Cycle	Measurement Divisor = Umbilical Artery Pulsatility Index
Umbilicocerebral ratio	DCM: 131010	(50536004, SCT, "Umbilical artery")	Pulsatility Index	PW Dop	Full Cycle	Measurement Divisor = MCA Pulsatility Index Method = Free Cord Loop Method
IVC preload index	DCM: 131011	Inferior Vena Cava	Peak Blood Vel	PW Dop	A-Wave	Flow=Retrograde (during numerator) Measurement Divisor = IVC S-wave peak velocity
IVC S/a	DCM: 131012	Inferior Vena Cava	Peak Blood Vel	PW Dop	S-wave	Flow=Antegrade (during numerator) Measurement Divisor = IVC a-wave peak velocity