

## DICOM Correction Item

Correction Number	CP-729
Log Summary:	Change SCP-ECG nomenclature to ISO/IEEE 11073
Type of Modification	Name of Standard
Modification	PS 3.16-2008, PS 3.6-2008
<p>Rationale for Correction</p> <p>The ISO/IEEE 11073 nomenclature is emerging as the consensus coded terminology for electrocardiography. It is now the reference terminology for HL7 Annotated ECG and for the Standard Communication Protocol for ECG (SCP-ECG), as well as for use within the 11073 Medical Instrumentation Bus Standard itself.</p> <p>Rather than identifying ECG concepts by the table within the SCP-ECG Standard and the numeric value used for the SCP-ECG encoding, this proposal introduces changes to directly use the 11073 nomenclature for ECG acquisition annotation.</p> <p>Note: this CP does not change TID 3700 (ECG Report), which is still specified using SCP-ECG codes. Update of that template requires significant changes beyond the scope of this CP.</p>	
<p>Sections of documents affected</p> <p>PS3.16 Section 2; Annexes B, C</p> <p>PS3.6 Annex A</p>	
Correction Wording:	

**Add to PS3.16 Section 2 Normative references**

ISO/IEEE 11073-10101 Health informatics – Point-of-care medical device communication – Nomenclature

ISO/IEEE 11073-10102 Health informatics – Point-of-care medical device communication – Annotated ECG – Nomenclature

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**Replace entire CID 3335 in PS3.16 Annex B with the following.**

**CID 3335 ECG Annotations**

This Context Group comprises the nomenclature of ISO/IEEE 11073-10102, limited to the hierarchies under Reference IDs MDC\_ECG\_WAVEC, MDC\_ECG\_WAVEP, MDC\_ECG\_BEAT, and MDC\_ECG\_NOISE.

The base terms from those hierarchies are included in the table below for reference. Note that these base terms are pre-coordinated with a variety of concept discriminators, and the code values for those pre-coordinated terms are arithmetically derived from the code values of the base terms. For the complete current list of terms and discriminator values, see the ISO/IEEE Standard. All pre-coordinated terms (annotation plus discriminators) within the identified hierarchies are part of this Context Group.

- Notes:
1. This Context Group is used in the Concept Name Code Sequence of the Waveform Annotation Sequence (0040,B020). See PS3.3.
  2. A prior version of this context group used codes from the SCP-ECG coding system.

**Context ID 3335  
ECG Annotations**

**Type: Extensible      Version: 20020904-20100625**

<b>Coding Scheme Designator</b>	<b>Code Value</b>	<b>Code Meaning</b>	<b>IEEE 11073 MDC Equivalent Reference ID (informative)</b>
MDC	10:256	P wave	MDC_ECG_WAVC_PWAVE
MDC	10:320	P' wave (second deflection in P wave)	MDC_ECG_WAVC_PPWAVE
MDC	10:384	P'' wave (third deflection in P wave)	MDC_ECG_WAVC_PPPWAVE
MDC	10:448	Q wave	MDC_ECG_WAVC_QWAVE
MDC	10:512	QS wave	MDC_ECG_WAVC_QSWAVE
MDC	10:608	R wave	MDC_ECG_WAVC_RWAVE
MDC	10:640	R' wave (second deflection in R Wave)	MDC_ECG_WAVC_RRWAVE
MDC	10:704	R'' wave (third deflection in R Wave)	MDC_ECG_WAVC_RRRWAVE
MDC	10:768	Notch	MDC_ECG_WAVC_NOTCH
MDC	10:832	S wave	MDC_ECG_WAVC_SWAVE
MDC	10:896	S' wave (second deflection in S Wave)	MDC_ECG_WAVC_SSWAVE
MDC	10:960	S'' wave (third deflection in S Wave)	MDC_ECG_WAVC_SSSWAVE
MDC	10:1024	T wave	MDC_ECG_WAVC_TWAVE
MDC	10:1088	T' wave (second deflection in T Wave)	MDC_ECG_WAVC_TTWAVE
MDC	10:1152	U wave	MDC_ECG_WAVC_UWAVE
MDC	10:1216	Delta wave	MDC_ECG_WAVC_DELTA
MDC	10:1280	Isoelectric region from global QRSONset to specific lead onset	MDC_ECG_WAVC_IWAVE
MDC	10:1344	Isoelectric region from specific lead QRSoffset to global offset	MDC_ECG_WAVC_KWAVE
MDC	10:1408	Osborne wave	MDC_ECG_WAVC_JWAVE
MDC	10:1472	Entire Beat (Pon to Toff, excluding U)	MDC_ECG_WAVC_PQRSTWAVE
MDC	10:1536	Entire Beat (Qon to Toff, excluding P and U)	MDC_ECG_WAVC_QRSTWAVE
MDC	10:1600	Entire QRS (excluding P, T and U)	MDC_ECG_WAVC_QRSWAVE
MDC	10:1664	TU fused wave	MDC_ECG_WAVC_TUWAVE
MDC	10:1728	Ventricular flutter wave	MDC_ECG_WAVC_VFLWAVE
MDC	10:1792	Atrial flutter wave	MDC_ECG_WAVC_AFLWAVE
MDC	10:1856	Isoelectric point or segment	MDC_ECG_WAVC_ISO
MDC	10:1920	PR Segment	MDC_ECG_WAVC_PRSEG
MDC	10:1984	ST Segment	MDC_ECG_WAVC_STSEG
MDC	10:2048	J-point	MDC_ECG_WAVC_STJ
MDC	10:2112	ST measurement point	MDC_ECG_WAVC_STM
MDC	10:2176	Isolated qrs-like artifact	MDC_ECG_WAVC_ARFCT
MDC	10:2240	Calibration pulse (individual pulse)	MDC_ECG_WAVC_CALP
MDC	10:2304	ST change	MDC_ECG_WAVC_STCH
MDC	10:2368	T-wave change	MDC_ECG_WAVC_TCH

MDC	10:2432	Ventricular Activation Time	MDC_ECG_WAVC_VAT
MDC	10:4096	Antibradycardia pace spike	MDC_ECG_WAVP_PACE
MDC	10:4352	atrium Antibradycardia pace spike	MDC_ECG_WAVP_PACE_ATR
MDC	10:4608	right atrium Antibradycardia pace spike	MDC_ECG_WAVP_PACE_ATR_R
MDC	10:4864	left atrium Antibradycardia pace spike	MDC_ECG_WAVP_PACE_ATR_L
MDC	10:5120	ventricular Antibradycardia pace spike	MDC_ECG_WAVP_PACE_V
MDC	10:5376	right ventricle Antibradycardia pace spike	MDC_ECG_WAVP_PACE_V_R
MDC	10:5632	left ventricle Antibradycardia pace spike	MDC_ECG_WAVP_PACE_V_L
MDC	10:5888	transthoracic Antibradycardia pace spike	MDC_ECG_WAVP_PACE_EXT
MDC	10:6144	Antitachycardia pace spike	MDC_ECG_WAVP_ATPACE
MDC	10:6400	atrium Antitachycardia pace spike	MDC_ECG_WAVP_ATPACE_ATR
MDC	10:6656	ventricle Antitachycardia pace spike	MDC_ECG_WAVP_ATPACE_V
MDC	10:6912	transthoracic Antitachycardia pace spike	MDC_ECG_WAVP_ATPACE_EXT
MDC	10:7168	Cardioversion spike	MDC_ECG_WAVP_CDVS
MDC	10:7424	atrium Cardioversion spike	MDC_ECG_WAVP_CDVS_ATR
MDC	10:7680	ventricle Cardioversion spike	MDC_ECG_WAVP_CDVS_V
MDC	10:7936	transthoracic Cardioversion spike	MDC_ECG_WAVP_CDVS_EXT
MDC	10:8192	Defibrillation spike	MDC_ECG_WAVP_DEFIB
MDC	10:8448	atrium Defibrillation spike	MDC_ECG_WAVP_DEFIB_ATR
MDC	10:8704	ventricle Defibrillation spike	MDC_ECG_WAVP_DEFIB_V
MDC	10:8960	transthoracic Defibrillation spike	MDC_ECG_WAVP_DEFIB_EXT
MDC	10:8192	Heart beat	MDC_ECG_BEAT
MDC	10:8208	Normal beat (sinus beat, normal conduction)	MDC_ECG_BEAT_NORMAL
MDC	10:8224	Abnormal beat	MDC_ECG_BEAT_ABNORMAL
MDC	10:8240	Dominant beat	MDC_ECG_BEAT_DOMINANT
MDC	10:8256	Supraventricular premature contraction	MDC_ECG_BEAT_SV_P_C
MDC	10:8272	Atrial premature contraction (beat)	MDC_ECG_BEAT_ATR_P_C
MDC	10:8288	Junctional (nodal) premature contraction	MDC_ECG_BEAT_JUNC_P_C
MDC	10:8304	Aberrated atrial premature beat (Ashman beat)	MDC_ECG_BEAT_ATR_P_C_ABERR
MDC	10:8320	Non-conducted p-wave (blocked)	MDC_ECG_BEAT_ATR_PWAVE_BLK
MDC	10:8336	Ventricular premature contraction beat	MDC_ECG_BEAT_V_P_C
MDC	10:8352	Fusion of ventricular and normal beat	MDC_ECG_BEAT_V_P_C_FUSION
MDC	10:8368	R-on-T premature ventricular beat	MDC_ECG_BEAT_V_P_C_RonT
MDC	10:8384	Supraventricular escape beat	MDC_ECG_BEAT_SV_ESC
MDC	10:8400	Atrial escape beat	MDC_ECG_BEAT_ATR_ESC
MDC	10:8416	Junctional (nodal) escape beat	MDC_ECG_BEAT_JUNC_ESC
MDC	10:8432	Ventricular escape beat	MDC_ECG_BEAT_V_ESC
MDC	10:8448	Bundle branch block beat	MDC_ECG_BEAT_BB_BLK
MDC	10:8464	Left bundle branch block beat	MDC_ECG_BEAT_LBB_BLK_COMP
MDC	10:8480	Incomplete left bundle branch block beat	MDC_ECG_BEAT_LBB_BLK_INCOMP

MDC	10:8496	Right bundle branch block beat	MDC_ECG_BEAT_RBB_BLK_COMP
MDC	10:8512	Incomplete right bundle branch block beat	MDC_ECG_BEAT_RBB_BLK_INCOMP
MDC	10:8528	Left anterior fascicular block beat	MDC_ECG_BEAT_BLK_ANT_L_HEMI
MDC	10:8544	Left posterior fascicular block beat	MDC_ECG_BEAT_BLK_POS_L_HEMI
MDC	10:8560	bifascicular block beat	MDC_ECG_BEAT_BLK_BIFASC
MDC	10:8576	trifascicular block beat	MDC_ECG_BEAT_BLK_TRIFASC
MDC	10:8592	bilateral bundle-branch block beat	MDC_ECG_BEAT_BLK_BILAT
MDC	10:8608	intraventricular conduction disturbance	MDC_ECG_BEAT_BLK_IVCD
MDC	10:8624	pre-excitation	MDC_ECG_BEAT_PREX
MDC	10:8640	Wolf-Parkinson-White syndrome	MDC_ECG_BEAT_WPW_UNK
MDC	10:8656	Wolf-Parkinson type A	MDC_ECG_BEAT_WPW_A
MDC	10:8672	Wolf-Parkinson type B	MDC_ECG_BEAT_WPW_B
MDC	10:8688	Lown-Ganong-Levine syndrome	MDC_ECG_BEAT_LGL
MDC	10:8704	Paced beat	MDC_ECG_BEAT_PACED
MDC	10:8720	Pacemaker Fusion beat	MDC_ECG_BEAT_PACED_FUS
MDC	10:8736	Unclassifiable beat	MDC_ECG_BEAT_UNKNOWN
MDC	10:8752	Pacemaker Learning beat	MDC_ECG_BEAT_LEARN
MDC	10:11200	No Noise	MDC_ECG_NOISE_CLEAN
MDC	10:11216	Moderate Noise, beats can be detected but cannot be classified	MDC_ECG_NOISE_MODERATE
MDC	10:11232	Severe Noise, beats cannot be detected or classified	MDC_ECG_NOISE_SEVERE
MDC	10:11248	No ECG signal is available	MDC_ECG_NOISE_NOSIGNAL

**Add new Context Groups in PS3.16 Annex B**

**CID 3690 ECG Control Variables Numeric**

This Context Group includes the ECG control variables specified in the ISO/IEEE 11073-10102 nomenclature that take numeric values. The terms are included in the table below for reference; these may not constitute the complete current list (see the ISO/IEEE Standard).

**Context ID 3690  
ECG Control Variables Numeric**

Type: Extensible

Version: 20100625

Coding Scheme Designator	Code Value	Code Meaning	IEEE 11073 MDC Equivalent Reference ID (informative)
MDC	10:11393	Sample rate	MDC_ECG_CTL_VBL_SAMPLE_RATE
MDC	10:11394	Sensitivity	MDC_ECG_CTL_VBL_SENSITIVITY
MDC	10:11395	Zero offset	MDC_ECG_CTL_VBL_ZERO_OFFSET
MDC	10:11397	Pad value	MDC_ECG_CTL_VBL_PAD_VALUE
MDC	10:11398	Time skew	MDC_ECG_CTL_VBL_TIME_SKEW
MDC	10:11399	Sample skew	MDC_ECG_CTL_VBL_SAMPLE_SKEW

MDC	10:11400	Time offset	MDC_ECG_CTL_VBL_TIME_OFFSET
MDC	10:11403	Low pass filter cutoff freq	MDC_ECG_CTL_VBL_ATTR_FILTER_CUTOFF_FREQ
MDC	10:11408	Notch filter frequency	MDC_ECG_CTL_VBL_ATTR_FILTER_NOTCH_FREQ
MDC	10:11409	Notch filter bandwidth	MDC_ECG_CTL_VBL_ATTR_FILTER_NOTCH_BANDWIDTH
MDC	10:11418	Interpolator SNR	MDC_ECG_CTL_VBL_INTERPOLATOR_SNR

**CID 3691 ECG Control Variables Text**

This Context Group includes the ECG control variables specified in the ISO/IEEE 11073-10102 nomenclature that take text or coded values. The terms are included in the table below for reference; these may not constitute the complete current list (see the ISO/IEEE Standard).

**Context ID 3691  
ECG Control Variables Text**

Type: Extensible Version: 20100625

Coding Scheme Designator	Code Value	Code Meaning	IEEE 11073 MDC Equivalent Reference ID (informative)
MDC	10:11402	Low pass filter	MDC_ECG_CTL_VBL_ATTR_FILTER_LOW_PASS
MDC	10:11404	High pass filter	MDC_ECG_CTL_VBL_ATTR_FILTER_HIGH_PASS
MDC	10:11406	High pass filter	MDC_ECG_CTL_VBL_ATTR_FILTER_DESCRIPTION
MDC	10:11407	Notch filter	MDC_ECG_CTL_VBL_ATTR_FILTER_NOTCH
MDC	10:11410	Notch filter description	MDC_ECG_CTL_VBL_ATTR_FILTER_DESCRIPTION
MDC	10:11412	Baseline description	MDC_ECG_CTL_VBL_BASELINE_DESC
MDC	10:11414	Interpolator	MDC_ECG_CTL_VBL_INTERPOLATOR
MDC	10:11416	Interpolator description	MDC_ECG_CTL_VBL_INTERPOLATOR_DESC

**Modify ECG Acquisition Context template in PS3.16 Annex C**

**TID 3401 ECG Acquisition Context**

**TID 3401  
ECG Acquisition Context**

Type: Extensible Order: Non-Significant

	VT	Concept Name	VM	Req Type	Condition	Value Set Constraint
1	CODE	(5.4.5-33-1, SCPECG, 1.3, "Electrode Placement") <b>DT (10:11345, MDC, "Lead System")</b>	1	U		BCID (3263) <b>Electrode Placement Values</b>
2	CODE	<b>DT</b> (109054, DCM, "Patient State")	1	U		BCID (3262) <b>ECG Patient State Values</b>
3	<b>NUMERIC</b>	<b>DT</b> (109055, DCM, "Protocol Stage")	1	U		UNITS=EV("{stage}", UCUM, "stage")
4	CODE	<b>DT</b> (109056, DCM, "Stress Protocol")	1	U		BCID (3261) <b>Stress Protocols</b>

5	CODE	(5.4.5-33-2, SCPECG, 1.3, "XYZ Electrode Configuration")	4	U		BCID(3264)
5	NUMERIC	DCID (3690) ECG Control Variables Numeric	1-n	U		
6	TEXT	DCID (3691) ECG Control Variables Text	1-n	U		

Add the following to PS3.6 Annex A

Table A-3  
 CONTEXT GROUP UID VALUES

Context UID	Context Identifier	Context Group Name
...		
<u>1.2.840.10008.6.1.895</u>	<u>3690</u>	<u>ECG Control Variables Numeric</u>
<u>1.2.840.10008.6.1.896</u>	<u>3691</u>	<u>ECG Control Variables Text</u>