RSNA International Covid-19 Open Radiology Database (RICORD)

De-identification Protocol

This document describes the de-identification protocol to be used by sites contributing data to RICORD. This protocol is implemented in the script supplied in the RSNA Anonymizer software (download here), which can be used to prepare DICOM datasets for submission to RICORD.

In PS 3.15 Appendix E, the DICOM standard (http://dicom.nema.org) specifies a set of de-identification rules for use in various situations. The rules are grouped into a Basic Application Confidentiality Profile, which removes all protected health information (PHI), and a set of options which relax certain classes of PHI that may be retained in certain cases. The sections below describe the RICORD De-identification Protocol (as implemented in Anonymizer) with reference to the DICOM Profile and its options. For reference purposes, the appendices list the specific elements modified in the anonymizer script and selected relevant sections of the DICOM Standard.

113100 Basic Application Confidentiality Profile
The RSNA Anonymizer program implements the Basic Profile.
- The PatientName (0010,0010) and PatientID (0010,0020) elements are modified by assigning sequential integers to unique PHI PatientIDs as they are encountered. This integer is appended to the SITEID parameter in the script, producing a string in the form <SITEID>-<integer>. The same string is used to populate both elements. The program keeps a database that is used to ensure that all studies of the same patient are de-identified in the same way.
- UIDs are modified by hashing the PHI value and appending that to a UID that has been obtained for the entire dataset.
- All UIDs are removed in groups
- All elements in groups 0032 through 4008 are removed.
- All private groups are removed.
- The PatientIdentityRemoved element (0012,0062) is assigned the value "YES".
- The DeIdentificationMethod element (0012,0063) is assigned the value "RSNA Covid-19 Dataset Default".
- 113100 is appended to the DeIdentificationMethodCodeSequence element (0012,0064).

113101 Clean Pixel Data Option
This option is not implemented.

113102 Clean Recognizable Visual Features Option
This option is not implemented.

113103 Clean Graphics Option

This option is not implemented, but curve and overlay groups (5XXX and 6XXX) are removed.

113104 Clean Structured Content Option

This option is not implemented, but the program filters all SR objects from the processing stream, so they do not end up in the dataset.

113105 Clean Descriptors Option

This option is partially implemented. Only the following elements defined by the option are kept:
- (0008,1030) StudyDescription
- (0008,103e) SeriesDescription

113106 Retain Longitudinal Temporal Information Full Dates Option

This option is not implemented.

113107 Retain Longitudinal Temporal Information Modified Dates Option

This option is partially implemented.
- All dates are modified by hashing the PHI PatientID element, producing a 40-digit integer. The last four digits of that integer are divided by 365, and the remainder is used as a number of days to offset the date being modified. This retains the temporal relationships between studies of a single patient while using different offsets for different patients.
- Time (time of day) elements are not modified.
- 113107 is appended to the DeIdentificationMethodCodeSequence element (0012,0064).

113108 Retain Patient Characteristics Option

This option is partially implemented. Only the following elements defined by the option are kept:
- (0010,0040) PatientSex
- (0010,1010) PatientAge
- (0010,1020) PatientSize
- (0010,1030) PatientWeight
- (0010,2160) EthnicGroup
- (0010,21A0) SmokingStatus
- 113108 is appended to the DeIdentificationMethodCodeSequence element (0012,0064).

113109 Retain Device Identity Option

This option is partially implemented. Only the following elements defined by the option are kept:
- (0008,0070) Manufacturer
- (0008,1090) ManufacturerModelName
- 113109 is appended to the DeIdentificationMethodCodeSequence element (0012,0064).

113110 Retain UIDs Option

This option is not implemented.

113111 Retain Safe Private Option

This option is not implemented.

Appendix I
The RSNA Covid-19 De-identification Profile

(0008,0014)	InstanceCreatorUID	@hashuid(@UIDROOT,this)
(0008,0015)	InstanceCoercionDateTime	@hashdate(this,PatientID)
(0008,0018)	SOPInstanceUID	@hashuid(@UIDROOT,this)
(0008,0020)	StudyDate	@hashdate(this,PatientID)
(0008,0021)	SeriesDate	@hashdate(this,PatientID)
(0008,0022)	AcquisitionDate	@hashdate(this,PatientID)
(0008,0023)	ContentDate	@hashdate(this,PatientID)
(0008,0024)	OverlayDate	@hashdate(this,PatientID)
(0008,0025)	CurveDate	@hashdate(this,PatientID)
(0008,002A)	AcquisitionDatetime	@hashdate(this,PatientID)
(0008,0050)	AccessionNumber	@hash(this,8)
(0008,0058)	FailedSOPInstanceUIDList	@remove()
(0008,0080)	InstitutionName	@empty()
(0008,0081)	InstitutionAddress	@remove()
(0008,0082)	InstitutionCodeSeq	@remove()
(0008,0090)	ReferringPhysicianName	@empty()
(0008,0092)	ReferringPhysicianAddress	@remove()
(0008,0094)	ReferringPhysicianPhoneNumbers	@remove()
(0008,0096)	ReferringPhysicianIdentificationSeq	@remove()
(0008,009C)	ConsultingPhysicianName	@empty()
(0008,009D)	ConsultingPhysicianIdentificationSeq	@remove()
(0008,1010)	StationName	@empty()
(0008,1040)	InstitutionalDepartmentName	@remove()
(0008,1041)	InstitutionalDepartmentTypeCodeSeq	@remove()
(0008,1048)	PhysicianOfRecord	@remove()
(0008,1049)	PhysicianOfRecordIdentificationSeq	@remove()
(0008,1050)	PerformingPhysicianName	@remove()
(0008,1052)	PerformingPhysicianIdentificationSeq	@remove()
(0008,1060)	NameOfPhysicianReadingStudy	@remove()
(0008,1062)	PhysicianReadingStudyIdentificationSeq	@remove()
(0008,1070)	OperatorName	@empty()
(0008,1072)	OperatorIdentificationSeq	@remove()
(0008,1080)	AdmittingDiagnosisDescription	@remove()
(0008,1084)	AdmittingDiagnosisCodeSeq	@remove()
(0008,1110)	RefStudySeq	@remove()

(0008,1111)	RefPPSSeq	@remove()
(0008,1120)	RefPatientSeq	@remove()
(0008,1140)	RefImageSeq	@remove()
(0008,1155)	RefSOPInstanceUID	@remove()
(0008,1195)	TransactionUID	@remove()
(0008,2111)	DerivationDescription	@remove()
(0008,2112)	SourceImageSeq	@remove()
(0008,3010)	IrradiationEventUID	@remove()
(0008,4000)	IdentifyingCommentsRetired	@remove()
(0010,0010)	PatientName	@param(@SITEID)-@integer(PatientID,"ptid",6)
(0010,0020)	PatientID	@param(@SITEID)-@integer(PatientID,"ptid",6)
(0010,0021)	IssuerOfPatientID	@remove()
(0010,0030)	PatientBirthDate	@hashdate(this,PatientID)
(0010,0050)	PatientInsurancePlanCodeSeq	@remove()
(0010,0101)	PatientPrimaryLanguageCodeSeq	@remove()
(0010,0102)	PatientPrimaryLanguageModifierCodeSeq	@remove()
(0010,1000)	OtherPatientIDs	@remove()
(0010,1001)	OtherPatientNames	@remove()
(0010,1002)	OtherPatientIDSeq	@remove()
(0010,1005)	PatientBirthName	@remove()
(0010,1040)	PatientAddress	@remove()
(0010,1050)	InsurancePlanIdentificationRetired	@remove()
(0010,1060)	PatientMotherBirthName	@remove()
(0010,1080)	MilitaryRank	@remove()
(0010,1081)	BranchOfService	@remove()
(0010,1090)	MedicalRecordLocator	@remove()
(0010,1100)	RefPatientPhotoSeq	@remove()
(0010,2000)	MedicalAlerts	@remove()
(0010,2110)	ContrastAllergies	@remove()
(0010,2150)	CountryOfResidence	@remove()
(0010,2152)	RegionOfResidence	@remove()
(0010,2154)	PatientPhoneNumbers	@remove()
(0010,2155)	PatientTelecomInformation	@remove()
(0010,2180)	Occupation	@remove()
(0010,21B0)	AdditionalPatientHistory	@remove()
(0010,21D0)	LastMenstrualDate	@hashdate(this,PatientID)
(0010,21F0)	PatientReligiousPreference	@remove()
(0010,2297)	ResponsiblePerson	@remove()

(0010,2299)	ResponsibleOrganization	@remove()
(0010,4000)	PatientComments	@remove()
(0012,0010)	ClinicalTrialSponsorName	@empty()
(0012,0020)	ClinicalTrialProtocolID	@empty()
(0012,0021)	ClinicalTrialProtocolName	@empty()
(0012,0030)	ClinicalTrialSiteID	@empty()
(0012,0031)	ClinicalTrialSiteName	@empty()
(0012,0040)	ClinicalTrialSubjectID	@empty()
(0012,0042)	ClinicalTrialSubjectReadingID	@empty()
(0012,0050)	ClinicalTrialTimePointID	@empty()
(0012,0051)	ClinicalTrialTimePointDescription	@remove()
(0012,0060)	CoordinatingCenterName	@empty()
(0012,0062)	PatientIdentityRemoved	YES
(0012,0063)	DeIdentificationMethod	@always()@append(){RSNA Covid-19 Dataset Default}
(0012,0064)	DeIdentificationMethodCodeSeq	113100/113107/113108/113109
(0012,0071)	ClinicalTrialSeriesID	@remove()
(0012,0072)	ClinicalTrialSeriesDescription	@remove()
(0012,0081)	ClinicalTrialProtocolEthicsCommitteeName	@empty()
(0012,0082)	ClinicalTrialProtocolEthicsCommitteeApprovalNumber	@remove()
(0016,002B)	MakerNote	@remove()
(0016,004B)	DeviceSettingDescription	@remove()
(0016,004D)	CameraOwnerName	@remove()
(0016,004E)	LensSpecification	@remove()
(0016,004F)	LensMake	@remove()
(0016,0050)	LensModel	@remove()
(0016,0051)	LensSerialNumber	@remove()
(0016,0070)	GPSVersionID	@remove()
(0016,0071)	GPSLatitudeRef	@remove()
(0016,0072)	GPSLatitude	@remove()
(0016,0073)	GPSLongitudeRef	@remove()
(0016,0074)	GPSLongitude	@remove()
(0016,0075)	GPSAltitudeRef	@remove()
(0016,0076)	GPSAltitude	@remove()
(0016,0077)	GPSTimeStamp	@remove()
(0016,0078)	GPSSatellites	@remove()
(0016,0079)	GPSStatus	@remove()
(0016,007A)	GPSMeasureMode	@remove()

(0016,007B)	GPSDOP	@remove()
(0016,007C)	GPSSpeedRef	@remove()
(0016,007D)	GPSSpeed	@remove()
(0016,007E)	GPSTrackRef	@remove()
(0016,007F)	GPSTrack	@remove()
(0016,0080)	GPSImgDirectionRef	@remove()
(0016,0081)	GPSImgDirection	@remove()
(0016,0082)	GPSMapDatum	@remove()
(0016,0083)	GPSDestLatitudeRef	@remove()
(0016,0084)	GPSDestLatitude	@remove()
(0016,0085)	GPSDestLongitudeRef	@remove()
(0016,0086)	GPSDestLongitude	@remove()
(0016,0087)	GPSDestBearingRef	@remove()
(0016,0088)	GPSDestBearing	@remove()
(0016,0089)	GPSDestDistanceRef	@remove()
(0016,008A)	GPSDestDistance	@remove()
(0016,008B)	GPSProcessingMethod	@remove()
(0016,008C)	GPSAreaInformation	@remove()
(0016,008D)	GPSDateStamp	@remove()
(0016,008E)	GPSDifferential	@remove()
(0018,1000)	DeviceSerialNumber	@empty()
(0018,1002)	DeviceUID	@hashuid(@UIDROOT,this)
(0018,1004)	PlateID	@remove()
(0018,1005)	GeneratorID	@remove()
(0018,1007)	CassetteID	@remove()
(0018,1008)	GantyID	@remove()
(0018,1009)	UniqueDeviceIdentifier	@remove()
(0018,100A)	UDISeq	@remove()
(0018,100B)	ManufacturerDeviceClassUID	@hashuid(@UIDROOT,this)
(0018,1030)	ProtocolName	@remove()
(0018,1400)	AcquisitionDeviceProcessingDescription	@remove()
(0018,2042)	TargetUID	@hashuid(@UIDROOT,this)
(0018,4000)	SeriesCommentsRetired	@remove()
(0018,700A)	DetectorID	@remove()
(0018,9185)	RespiratoryMotionCompensationTechniqueDescription	@remove()
(0018,9367)	XRaySourceID	@empty()
(0018,9369)	SourceStartDateTime	@hashdate(this,PatientID)

(0018,936A)	SourceEndDateTime	@hashdate(this,PatientID)
(0018,9371)	XRayDetectorID	@empty()
(0018,9373)	XRayDetectorLabel	@remove()
(0018,937B)	MultienergyAcquisitionDescription	@remove()
(0018,937F)	DecompositionDescription	@remove()
(0018,9424)	AcquisitionProtocolDescription	@remove()
(0018,9516)	StartAcquisitionDateTime	@hashdate(this,PatientID)
(0018,9517)	EndAcquisitionDateTime	@hashdate(this,PatientID)
(0018,A003)	ContributionDescription	@remove()
(0020,000D)	StudyInstanceUID	@hashuid(@UIDROOT,this)
(0020,000E)	SeriesInstanceUID	@hashuid(@UIDROOT,this)
(0020,0010)	StudyID	@empty()
(0020,0052)	FrameOfReferenceUID	@hashuid(@UIDROOT,this)
(0020,0200)	SynchronizationFrameOfReferenceUID	@hashuid(@UIDROOT,this)
(0020,3401)	ModifyingDeviceIDRetired	@remove()
(0020,3406)	ModifiedImageDescriptionRetired	@remove()
(0020,4000)	ImageComments	@remove()
(0020,9158)	FrameComments	@remove()
(0020,9161)	ConcatenationUID	@hashuid(@UIDROOT,this)
(0020,9164)	DimensionOrganizationUID	@hashuid(@UIDROOT,this)
(0028,1199)	PaletteColorLUTUID	@hashuid(@UIDROOT,this)
(0028,1214)	LargePaletteColorLUTUID	@hashuid(@UIDROOT,this)
(0028,4000)	PixelCommentsRetired	@remove()
(0032,0012)	StudyIDIssuer	@remove()
(0032,1020)	ScheduledStudyLocation	@remove()
(0032,1021)	ScheduledStudyLocationAET	@remove()
(0032,1030)	ReasonforStudy	@remove()
(0032,1032)	RequestingPhysician	@remove()
(0032,1033)	RequestingService	@remove()
(0032,1060)	RequestedProcedureDescription	@empty()
(0032,1066)	ReasonForVisit	@remove()
(0032,1067)	ReasonForVisitCodeSeq	@remove()
(0032,1070)	RequestedContrastAgent	@remove()
(0032,4000)	StudyComments	@remove()
(0034,0001)	FlowIdentifierSeq	@remove()
(0034,0002)	FlowIdentifier	@empty()
(0034,0005)	SourceIdentifier	@empty()
(0034,0007)	FrameOriginTimestamp	@remove()

(0038,0004)	RefPatientAliasSeq	@remove()
(0038,0010)	AdmissionID	@remove()
(0038,0011)	IssuerOfAdmissionIDRetired	@remove()
(0038,0014)	IssuerOfAdmissionIDSeq	@remove()
(0038,001E)	ScheduledPatientInstitutionResidence	@remove()
(0038,0020)	AdmittingDate	@remove()
(0038,0021)	AdmittingTime	@remove()
(0038,0040)	DischargeDiagnosisDescription	@remove()
(0038,0050)	SpecialNeeds	@remove()
(0038,0060)	ServiceEpisodeID	@remove()
(0038,0061)	IssuerOfServiceEpisodeIDRET	@remove()
(0038,0062)	ServiceEpisodeDescription	@remove()
(0038,0064)	IssuerOfServiceEpisodeIDSeq	@remove()
(0038,0300)	CurrentPatientLocation	@remove()
(0038,0400)	PatientInstitutionResidence	@remove()
(0038,0500)	PatientState	@remove()
(0038,4000)	VisitComments	@remove()
(0040,0001)	ScheduledStationAET	@remove()
(0040,0002)	SPSStartDate	@remove()
(0040,0003)	SPSStartTime	@remove()
(0040,0004)	SPSEndDate	@remove()
(0040,0005)	SPSEndTime	@remove()
(0040,0006)	ScheduledPerformingPhysicianName	@remove()
(0040,0007)	SPSDescription	@remove()
(0040,000B)	ScheduledPerformingPhysicianIdentificationSeq	@remove()
(0040,0010)	ScheduledStationName	@remove()
(0040,0011)	SPSLocation	@remove()
(0040,0012)	PreMedication	@remove()
(0040,0241)	PerformedStationAET	@remove()
(0040,0242)	PerformedStationName	@remove()
(0040,0243)	PerformedLocation	@remove()
(0040,0244)	PPSStartDate	@remove()
(0040,0245)	PPSStartTime	@remove()
(0040,0250)	PPSEndDate	@remove()
(0040,0251)	PPSEndTime	@remove()
(0040,0253)	PPSID	@remove()
(0040,0254)	PPSDescription	@remove()
(0040,0275)	RequestAttributesSeq	@remove()

(0040,0280)	PPSComments	@remove()
(0040,050A)	SpecimenAccessionNumber	@remove()
(0040,0512)	ContainerIdentifier	@empty()
(0040,0513)	IssuerOfTheContainerIdentifierSeq	@remove()
(0040,051A)	ContainerDescription	@remove()
(0040,0551)	SpecimenIdentifier	@empty()
(0040,0554)	SpecimenUID	@remove()
(0040,0555)	AcquisitionContextSeq	@remove()
(0040,0562)	IssuerOfTheSpecimenIdentifierSeq	@remove()
(0040,0600)	SpecimenShortDescription	@remove()
(0040,0602)	SpecimenDetailedDescription	@remove()
(0040,0610)	SpecimenPreparationSeq	@remove()
(0040,06FA)	SlideIdentifier	@remove()
(0040,1001)	RequestedProcedureID	@remove()
(0040,1002)	ReasonForTheRequestedProcedure	@remove()
(0040,1004)	PatientTransportArrangements	@remove()
(0040,1005)	RequestedProcedureLocation	@remove()
(0040,100A)	ReasonforRequestedProcedureCodeSeq	@remove()
(0040,1010)	NamesOfIntendedRecipientsOfResults	@remove()
(0040,1011)	IntendedRecipientsOfResultsIdentificationSeq	@remove()
(0040,1101)	PersonIdentificationCodeSeq	@remove()
(0040,1102)	PersonAddress	@remove()
(0040,1103)	PersonTelephoneNumbers	@remove()
(0040,1104)	PersonTelecomInformation	@remove()
(0040,1400)	RequestedProcedureComments	@remove()
(0040,2001)	ReasonForTheImagingServiceRequest	@remove()
(0040,2008)	OrderEnteredBy	@remove()
(0040,2009)	OrderEntererLocation	@remove()
(0040,2010)	OrderCallbackPhoneNumber	@remove()
(0040,2011)	OrderCallbackTelecomInformation	@remove()
(0040,2016)	PlacerOrderNumber	@empty()
(0040,2017)	FillerOrderNumber	@empty()
(0040,2400)	ImagingServiceRequestComments	@remove()
(0040,3001)	ConfidentialityPatientData	@remove()
(0040,4005)	SPSStartDateAndTime	@remove()
(0040,4008)	ScheduledProcedureStepExpirationDateTime	@remove()
(0040,4010)	SPSModificationDateandTime	@remove()
(0040,4011)	ExpectedCompletionDateAndTime	@remove()

(0040,4023)	RefGPSPSTransactionUID	@remove()
(0040,4025)	ScheduledStationNameCodeSeq	@remove()
(0040,4027)	ScheduledStationGeographicLocationCodeSeq	@remove()
(0040,4028)	PerformedStationNameCodeSeq	@remove()
(0040,4030)	PerformedStationGeographicLocationCodeSeq	@remove()
(0040,4034)	ScheduledHumanPerformersSeq	@remove()
(0040,4035)	ActualHumanPerformersSeq	@remove()
(0040,4036)	HumanPerformerOrganization	@remove()
(0040,4037)	HumanPerformerName	@remove()
(0040,4050)	PerformedProcedureStepStartDateTime	@remove()
(0040,4051)	PerformedProcedureStepEndDateTime	@remove()
(0040,4052)	ProcedureStepCancellationDateTime	@remove()
(0040,A027)	VerifyingOrganization	@empty()
(0040,A073)	VerifyingObserverSeq	@remove()
(0040,A075)	VerifyingObserverName	@empty()
(0040,A078)	AuthorObserverSeq	@remove()
(0040,A07A)	ParticipantSeq	@remove()
(0040,A07C)	CustodialOrganizationSeq	@remove()
(0040,A088)	VerifyingObserverIdentificationCodeSeq	@remove()
(0040,A123)	PersonName	@empty()
(0040,A124)	UID	@remove()
(0040,A171)	ObservationUID	@remove()
(0040,A172)	RefObservationUIDTrial	@remove()
(0040,A192)	ObservationDateTrial	@remove()
(0040,A193)	ObservationTimeTrial	@remove()
(0040,A307)	CurrentObserverTrial	@remove()
(0040,A352)	VerbalSourceTrial	@remove()
(0040,A353)	AddressTrial	@remove()
(0040,A354)	TelephoneNumberTrial	@remove()
(0040,A358)	VerbalSourceIdentifierCodeSequenceTrial	@remove()
(0040,A402)	ObservationSubjectUIDTrial	@remove()
(0040,A730)	ContentSeq	@remove()
(0040,DB0C)	TemplateExtensionOrganizationUID	@remove()
(0040,DB0D)	TemplateExtensionCreatorUID	@remove()
(0050,001B)	ContainerComponentID	@remove()
(0050,0020)	DeviceDescription	@remove()
(0050,0021)	LongDeviceDescription	@remove()
(0062,0021)	TrackingUID	@remove()

(0070,0001)	GraphicAnnotationSeq	@remove()
(0070,0084)	PresentationCreatorName	@empty()
(0070,0086)	ContentCreatorIdentificationSeq	@remove()
(0070,031A)	FiducialUID	@remove()
(0070,1101)	PresentationDisplayCollectionUID	@remove()
(0070,1102)	PresentationSequenceCollectionUID	@remove()
(0088,0140)	StorageMediaFileSetUID	@remove()
(0088,0200)	IconImageSeq	@remove()
(0088,0904)	TopicTitle	@remove()
(0088,0906)	TopicSubject	@remove()
(0088,0910)	TopicAuthor	@remove()
(0088,0912)	TopicKeyWords	@remove()
(0400,0100)	DigitalSignatureUID	@remove()
(0400,0402)	RefDigitalSignatureSeq	@remove()
(0400,0403)	RefSOPInstanceMACSeq	@remove()
(0400,0404)	MAC	@remove()
(0400,0550)	ModifiedAttributesSeq	@remove()
(0400,0561)	OriginalAttributesSeq	@remove()
(0400,0600)	InstanceOriginStatus	@remove()
(2030,0020)	TextString	@remove()
(2200,0002)	LabelText	@empty()
(2200,0005)	BarcodeValue	@empty()
(3006,0024)	RefFrameOfReferenceUID	@remove()
(3006,00C2)	RelatedFrameOfReferenceUID	@remove()
(3008,0054)	FirstTreatmentDate	@remove()
(3008,0056)	MostRecentTreatmentDate	@remove()
(3008,0105)	SourceSerialNumber	@remove()
(3008,0250)	TreatmentDate	@remove()
(3008,0251)	TreatmentTime	@remove()
(300A,0002)	RTPlanLabel	@remove()
(300A,0003)	RTPlanName	@remove()
(300A,0004)	RTPlanDescription	@remove()
(300A,0006)	RTPlanDate	@remove()
(300A,0007)	RTPlanTime	@remove()
(300A,000E)	PrescriptionDescription	@remove()
(300A,0013)	DoseReferenceUID	@remove()
(300A,0016)	DoseReferenceDescription	@remove()
(300A,0072)	FractionGroupDescription	@remove()

(300A,0083)	RefDoseReferenceUID	@remove()
(300A,00B2)	TreatmentMachineName	@remove()
(300A,00C3)	BeamDescription	@remove()
(300A,00DD)	BolusDescription	@remove()
(300A,0196)	FixationDeviceDescription	@remove()
(300A,01A6)	ShieldingDeviceDescription	@remove()
(300A,01B2)	SetupTechniqueDescription	@remove()
(300A,0216)	SourceManufacturer	@remove()
(300A,02EB)	CompensatorDescription	@remove()
(300A,0608)	TreatmentPositionGroupLabel	@remove()
(300A,0609)	TreatmentPositionGroupUID	@remove()
(300A,0611)	RTAccessoryHolderSlotID	@remove()
(300A,0615)	RTAccessoryDeviceSlotID	@remove()
(300A,0619)	RadiationDoseIdentificationLabel	@remove()
(300A,0623)	RadiationDoseInVivoMeasurementLabel	@remove()
(300A,062A)	RTToleranceSetLabel	@remove()
(300A,0650)	PatientSetupUID	@remove()
(300A,0676)	EquipmentFrameOfReferenceDescription	@remove()
(300A,067C)	RadiationGenerationModeLabel	@remove()
(300A,067D)	RadiationGenerationModeDescription	@remove()
(300C,0113)	ReasonForOmissionDescription	@remove()
(300E,0008)	ReviewerName	@remove()
(3010,0006)	ConceptualVolumeUID	@remove()
(3010,000B)	RefConceptualVolumeUID	@remove()
(3010,000F)	ConceptualVolumeCombinationDescription	@remove()
(3010,0013)	ConstituentConceptualVolumeUID	@remove()
(3010,0015)	SourceConceptualVolumeUID	@remove()
(3010,0017)	ConceptualVolumeDescription	@remove()
(3010,001B)	DeviceAlternateIdentifier	@remove()
(3010,002D)	DeviceLabel	@remove()
(3010,0031)	RefFiducialsUID	@remove()
(3010,0033)	UserContentLabel	@remove()
(3010,0034)	UserContentLongLabel	@remove()
(3010,0035)	EntityLabel	@remove()
(3010,0036)	EntityName	@remove()
(3010,0037)	EntityDescription	@remove()
(3010,0038)	EntityLongLabel	@remove()
(3010,003B)	RTTreatmentPhaseUID	@remove()

(3010,0043)	ManufacturerDeviceIdentifier	@remove()
(3010,004C)	IntendedPhaseStartDate	@remove()
(3010,004D)	IntendedPhaseEndDate	@remove()
(3010,0054)	RTPrescriptionLabel	@remove()
(3010,0056)	RTTreatmentApproachLabel	@remove()
(3010,005A)	RTPhysicianIntentNarrative	@remove()
(3010,005C)	ReasonForSuperseding	@remove()
(3010,0061)	PriorTreatmentDoseDescription	@remove()
(3010,006E)	DosimetricObjectiveUID	@remove()
(3010,006F)	RefDosimetricObjectiveUID	@remove()
(3010,0077)	TreatmentSite	@remove()
(3010,007A)	TreatmentTechniqueNotes	@remove()
(3010,007B)	PrescriptionNotes	@remove()
(3010,007F)	FractionationNotes	@remove()
(3010,0081)	PrescriptionNotesSeq	@remove()
(4000,0010)	ArbitraryRetired	@remove()
(4000,4000)	ArbitraryCommentsRetired	@remove()
(4008,0042)	ResultsIDIssuer	@remove()
(4008,0102)	InterpretationRecorder	@remove()
(4008,010A)	InterpretationTranscriber	@remove()
(4008,010B)	InterpretationText	@remove()
(4008,010C)	InterpretationAuthor	@remove()
(4008,0111)	InterpretationApproverSeq	@remove()
(4008,0114)	PhysicianApprovingInterpretation	@remove()
(4008,0115)	InterpretationDiagnosisDescription	@remove()
(4008,0118)	ResultsDistributionListSeq	@remove()
(4008,0119)	DistributionName	@remove()
(4008,011A)	DistributionAddress	@remove()
(4008,0202)	InterpretationIDIssuer	@remove()
(4008,0300)	Impressions	@remove()
(4008,4000)	ResultsComments	@remove()
(FFFA,FFFA)	DigitalSignaturesSeq	@remove()
(FFFC,FFFC)	DataSetTrailingPadding	@remove()

Appendix II
The DICOM Standard De-identification Method Codes

The table below is reproduced from DICOM PS3.16. It defines the codes associated with the Basic Profile and each of the options. These codes are used to populate the DeIdentificationMethodCodeSequence element (0012,0064) to reflect the modifications which were done to the DICOM object.

Code Value	Code Meaning
113100	Basic Application Confidentiality Profile
113101	Clean Pixel Data Option
113102	Clean Recognizable Visual Features Option
113103	Clean Graphics Option
113104	Clean Structured Content Option
113105	Clean Descriptors Option
113106	Retain Longitudinal Temporal Information Full Dates Option
113107	Retain Longitudinal Temporal Information Modified Dates Option
113108	Retain Patient Characteristics Option
113109	Retain Device Identity Option
113110	Retain UIDs Option
113111	Retain Safe Private Option

Appendix III

The DICOM Standard De-identification Profile and Options

The table below is reproduced from DICOM PS3.15E (2020). It describes the de-identification rules for elements in the Basic De-identification Profile and each of the options. The table entries are defined as:

- D - replace with a non-zero length value that may be a dummy value and consistent with the VR
- Z - replace with a zero length value, or a non-zero length value that may be a dummy value and consistent with the VR
- X - remove
- K - keep (unchanged for non-sequence attributes, cleaned for sequences)
- C - clean, that is replace with values of similar meaning known not to contain identifying information and consistent with the VR
- U - replace with a non-zero length UID that is internally consistent within a set of Instances
- Z/D - Z unless D is required to maintain IOD conformance (Type 2 versus Type 1)
- X/Z - X unless Z is required to maintain IOD conformance (Type 3 versus Type 2)
- X/D - X unless D is required to maintain IOD conformance (Type 3 versus Type 1)
- X/Z/D - X unless Z or D is required to maintain IOD conformance (Type 3 versus Type 2 versus Type 1)
- X/Z/U - X unless Z or replacement of contained instance UIDs (U) is required to maintain IOD conformance (Type 3 versus Type 2 versus Type 1 sequences containing UID references)

DICOM PS 3.15E Table E.1.-1

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Affected SOP Instance UID	(0000,1000)	X		K								
Requested SOP Instance UID	(0000,1001)	U		K								
Media Storage SOP Instance UID	(0002,0003)	U		K								
Referenced SOP Instance UID in File	(0004,1511)	U		K								
Instance Creator UID	(0008,0014)	U		K								
Instance Coercion DateTime	(0008,0015)	X						K	C			
SOP Instance UID	(0008,0018)	U		K								
Study Date	(0008,0020)	Z						K	C			
Series Date	(0008,0021)	X/D						K	C			

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Acquisition Date	(0008,0022)	X/Z						K	C			
Content Date	(0008,0023)	Z/D						K	C			
Overlay Date	(0008,0024)	X						K	C			
Curve Date	(0008,0025)	X						K	C			
Acquisition DateTime	(0008,002A)	X/Z/D						K	C			
Study Time	(0008,0030)	Z						K	C			
Series Time	(0008,0031)	X/D						K	C			
Acquisition Time	(0008,0032)	X/Z						K	C			
Content Time	(0008,0033)	Z/D						K	C			
Overlay Time	(0008,0034)	X						K	C			
Curve Time	(0008,0035)	X						K	C			
Accession Number	(0008,0050)	Z										
Failed SOP Instance UID List	(0008,0058)	U		K								
Institution Name	(0008,0080)	X/Z/D				K						
Institution Address	(0008,0081)	X				K						
Institution Code Sequence	(0008,0082)	X/Z/D				K						
Referring Physician's Name	(0008,0090)	Z										
Referring Physician's Address	(0008,0092)	X										
Referring Physician's Telephone Numbers	(0008,0094)	X										
Referring Physician Identification Sequence	(0008,0096)	X										
Consulting	(0008,009C)	Z										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Physician's Name												
Consulting Physician Identification Sequence	(0008,009D)	X										
Timezone Offset From UTC	(0008,0201)	X						K	C			
Station Name	(0008,1010)	X/Z/D			K							
Study Description	(0008,1030)	X								C		
Series Description	(0008,103E)	X								C		
Institutional Department Name	(0008,1040)	X				K						
Institutional Department Type Code Sequence	(0008,1041)	X				K						
Physician(s) of Record	(0008,1048)	X										
Physician(s) of Record Identification Sequence	(0008,1049)	X										
Performing Physician's Name	(0008,1050)	X										
Performing Physician Identification Sequence	(0008,1052)	X										
Name of Physician(s) Reading Study	(0008,1060)	X										
Physician(s) Reading Study Identification Sequence	(0008,1062)	X										
Operators' Name	(0008,1070)	X/Z/D										
Operator Identification	(0008,1072)	X/D										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Sequence												
Admitting Diagnoses Description	(0008,1080)	X								C		
Admitting Diagnoses Code Sequence	(0008,1084)	X								C		
Referenced Study Sequence	(0008,1110)	X/Z		K								
Referenced Performed Procedure Step Sequence	(0008,1111)	X/Z/D		K								
Referenced Patient Sequence	(0008,1120)	X		X								
Referenced Image Sequence	(0008,1140)	X/Z/U*		K								
Referenced SOP Instance UID	(0008,1155)	U		K								
Transaction UID	(0008,1195)	U		K								
Derivation Description	(0008,2111)	X								C		
Source Image Sequence	(0008,2112)	X/Z/U*		K								
Irradiation Event UID	(0008,3010)	U		K								
Identifying Comments	(0008,4000)	X								C		
Patient's Name	(0010,0010)	Z										
Patient ID	(0010,0020)	Z										
Issuer of Patient ID	(0010,0021)	X										
Patient's Birth Date	(0010,0030)	Z										
Patient's Birth Time	(0010,0032)	X										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Patient's Sex	(0010,0040)	Z					K					
Patient's Insurance Plan Code Sequence	(0010,0050)	X										
Patient's Primary Language Code Sequence	(0010,0101)	X										
Patient's Primary Language Modifier Code Sequence	(0010,0102)	X										
Other Patient IDs	(0010,1000)	X										
Other Patient Names	(0010,1001)	X										
Other Patient IDs Sequence	(0010,1002)	X										
Patient's Birth Name	(0010,1005)	X										
Patient's Age	(0010,1010)	X					K					
Patient's Size	(0010,1020)	X					K					
Patient's Weight	(0010,1030)	X					K					
Patient's Address	(0010,1040)	X										
Insurance Plan Identification	(0010,1050)	X										
Patient's Mother's Birth Name	(0010,1060)	X										
Military Rank	(0010,1080)	X										
Branch of Service	(0010,1081)	X										
Medical Record Locator	(0010,1090)	X										
Referenced Patient Photo Sequence	(0010,1100)	X										
Medical Alerts	(0010,2000)	X								C		

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Allergies	(0010,2110)	X					C			C		
Country of Residence	(0010,2150)	X										
Region of Residence	(0010,2152)	X										
Patient's Telephone Numbers	(0010,2154)	X										
Patient's Telecom Information	(0010,2155)	X										
Ethnic Group	(0010,2160)	X					K					
Occupation	(0010,2180)	X								C		
Smoking Status	(0010,21A0)	X					K					
Additional Patient History	(0010,21B0)	X								C		
Pregnancy Status	(0010,21C0)	X					K					
Last Menstrual Date	(0010,21D0)	X						K	C			
Patient's Religious Preference	(0010,21F0)	X										
Patient's Sex Neutered	(0010,2203)	X/Z					K					
Responsible Person	(0010,2297)	X										
Responsible Organization	(0010,2299)	X										
Patient Comments	(0010,4000)	X								C		
Clinical Trial Sponsor Name	(0012,0010)	D										
Clinical Trial Protocol ID	(0012,0020)	D										
Clinical Trial Protocol Name	(0012,0021)	Z										
Clinical Trial Site ID	(0012,0030)	Z				K						
Clinical Trial	(0012,0031)	Z				K						

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Site Name												
Clinical Trial Subject ID	(0012,0040)	D										
Clinical Trial Subject Reading ID	(0012,0042)	D										
Clinical Trial Time Point ID	(0012,0050)	Z										
Clinical Trial Time Point Description	(0012,0051)	X								C		
Clinical Trial Coordinating Center Name	(0012,0060)	Z				K						
Clinical Trial Series ID	(0012,0071)	X										
Clinical Trial Series Description	(0012,0072)	X								C		
Clinical Trial Protocol Ethics Committee Name	(0012,0081)	D				K						
Clinical Trial Protocol Ethics Committee Approval Number	(0012,0082)	X										
Maker Note	(0016,002B)	X								C		
Device Setting Description	(0016,004B)	X								C		
Camera Owner Name	(0016,004D)	X										
Lens Specification	(0016,004E)	X			K							
Lens Make	(0016,004F)	X			K							
Lens Model	(0016,0050)	X			K							
Lens Serial Number	(0016,0051)	X			K							
GPS Version ID	(0016,0070)	X										
GPS Latitude Ref	(0016,0071)	X										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
GPS Latitude	(0016,0072)	X										
GPS Longitude Ref	(0016,0073)	X										
GPS Longitude	(0016,0074)	X										
GPS Altitude Ref	(0016,0075)	X										
GPS Altitude	(0016,0076)	X										
GPS Time Stamp	(0016,0077)	X										
GPS Satellites	(0016,0078)	X										
GPS Status	(0016,0079)	X										
GPS Measure Mode	(0016,007A)	X										
GPS DOP	(0016,007B)	X										
GPS Speed Ref	(0016,007C)	X										
GPS Speed	(0016,007D)	X										
GPS Track Ref	(0016,007E)	X										
GPS Track	(0016,007F)	X										
GPS Img Direction Ref	(0016,0080)	X										
GPS Img Direction	(0016,0081)	X										
GPS Map Datum	(0016,0082)	X										
GPS Dest Latitude Ref	(0016,0083)	X										
GPS Dest Latitude	(0016,0084)	X										
GPS Dest Longitude Ref	(0016,0085)	X										
GPS Dest Longitude	(0016,0086)	X										
GPS Dest Bearing Ref	(0016,0087)	X										
GPS Dest Bearing	(0016,0088)	X										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
GPS Dest Distance Ref	(0016,0089)	X										
GPS Dest Distance	(0016,008A)	X										
GPS Processing Method	(0016,008B)	X										
GPS Area Information	(0016,008C)	X										
GPS Date Stamp	(0016,008D)	X						K	C			
GPS Differential	(0016,008E)	X										
Contrast/Bolus Agent	(0018,0010)	Z/D								C		
Device Serial Number	(0018,1000)	X/Z/D			K							
Device UID	(0018,1002)	U		K	K							
Plate ID	(0018,1004)	X			K							
Generator ID	(0018,1005)	X			K							
Cassette ID	(0018,1007)	X			K							
Gantry ID	(0018,1008)	X			K							
Unique Device Identifier	(0018,1009)	X			K							
UDI Sequence	(0018,100A)	X			K							
Manufacturer's Device Class UID	(0018,100B)	U		K	K							
Protocol Name	(0018,1030)	X/D								C		
Acquisition Device Processing Description	(0018,1400)	X/D								C		
Target UID	(0018,2042)	U		K								
Acquisition Comments	(0018,4000)	X								C		
Detector ID	(0018,700A)	X/D			K							
Respiratory Motion	(0018,9185)	X								C		

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Compensation Technique Description												
X-Ray Source ID	(0018,9367)	D			K							
Source Start DateTime	(0018,9369)	D						K	C			
Source End DateTime	(0018,936A)	D						K	C			
X-Ray Detector ID	(0018,9371)	D			K							
X-Ray Detector Label	(0018,9373)	X			K							
Multi-energy Acquisition Description	(0018,937B)	X								C		
Decomposition Description	(0018,937F)	X								C		
Acquisition Protocol Description	(0018,9424)	X								C		
Start Acquisition DateTime	(0018,9516)	X/D						K	C			
End Acquisition DateTime	(0018,9517)	X/D						K	C			
Contribution Description	(0018,A003)	X								C		
Study Instance UID	(0020,000D)	U		K								
Series Instance UID	(0020,000E)	U		K								
Study ID	(0020,0010)	Z										
Frame of Reference UID	(0020,0052)	U		K								
Synchronization Frame of Reference UID	(0020,0200)	U		K								
Modifying Device ID	(0020,3401)	X										
Modified Image Description	(0020,3406)	X										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Image Comments	(0020,4000)	X								C		
Frame Comments	(0020,9158)	X								C		
Concatenation UID	(0020,9161)	U		K								
Dimension Organization UID	(0020,9164)	U		K								
Palette Color Lookup Table UID	(0028,1199)	U		K								
Large Palette Color Lookup Table UID	(0028,1214)	U		K								
Image Presentation Comments	(0028,4000)	X										
Study ID Issuer	(0032,0012)	X										
Scheduled Study Location	(0032,1020)	X			K							
Scheduled Study Location AE Title	(0032,1021)	X			K							
Reason for Study	(0032,1030)	X								C		
Requesting Physician	(0032,1032)	X										
Requesting Service	(0032,1033)	X										
Requested Procedure Description	(0032,1060)	X/Z								C		
Reason for Visit	(0032,1066)	X								C		
Reason for Visit Code Sequence	(0032,1067)	X								C		
Requested Contrast Agent	(0032,1070)	X								C		
Study Comments	(0032,4000)	X								C		
Flow Identifier	(0034,0001)	D										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Sequence												
Flow Identifier	(0034,0002)	D										
Source Identifier	(0034,0005)	D										
Frame Origin Timestamp	(0034,0007)	D						K	C			
Referenced Patient Alias Sequence	(0038,0004)	X										
Admission ID	(0038,0010)	X										
Issuer of Admission ID	(0038,0011)	X										
Issuer of Admission ID Sequence	(0038,0014)	X										
Scheduled Patient Institution Residence	(0038,001E)	X										
Admitting Date	(0038,0020)	X						K	C			
Admitting Time	(0038,0021)	X						K	C			
Discharge Diagnosis Description	(0038,0040)	X								C		
Special Needs	(0038,0050)	X					C					
Service Episode ID	(0038,0060)	X										
Issuer of Service Episode ID	(0038,0061)	X										
Service Episode Description	(0038,0062)	X								C		
Issuer of Service Episode ID Sequence	(0038,0064)	X										
Current Patient Location	(0038,0300)	X										
Patient's Institution Residence	(0038,0400)	X										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Patient State	(0038,0500)	X					C			C		
Visit Comments	(0038,4000)	X								C		
Scheduled Station AE Title	(0040,0001)	X			K							
Scheduled Procedure Step Start Date	(0040,0002)	X						K	C			
Scheduled Procedure Step Start Time	(0040,0003)	X						K	C			
Scheduled Procedure Step End Date	(0040,0004)	X						K	C			
Scheduled Procedure Step End Time	(0040,0005)	X						K	C			
Scheduled Performing Physician's Name	(0040,0006)	X										
Scheduled Procedure Step Description	(0040,0007)	X								C		
Scheduled Performing Physician Identification Sequence	(0040,000B)	X										
Scheduled Station Name	(0040,0010)	X			K							
Scheduled Procedure Step Location	(0040,0011)	X			K							
Pre-Medication	(0040,0012)	X					C					
Performed Station AE Title	(0040,0241)	X			K							
Performed Station Name	(0040,0242)	X			K							
Performed Location	(0040,0243)	X										
Performed Procedure Step Start Date	(0040,0244)	X						K	C			

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Performed Procedure Step Start Time	(0040,0245)	X						K	C			
Performed Procedure Step End Date	(0040,0250)	X						K	C			
Performed Procedure Step End Time	(0040,0251)	X						K	C			
Performed Procedure Step ID	(0040,0253)	X										
Performed Procedure Step Description	(0040,0254)	X								C		
Request Attributes Sequence	(0040,0275)	X								C		
Comments on the Performed Procedure Step	(0040,0280)	X								C		
Specimen Accession Number	(0040,050A)	X										
Container Identifier	(0040,0512)	D										
Issuer of the Container Identifier Sequence	(0040,0513)	Z										
Container Description	(0040,051A)	X								C		
Specimen Identifier	(0040,0551)	D										
Specimen UID	(0040,0554)	U		K								
Acquisition Context Sequence	(0040,0555)	X/Z									C	
Issuer of the Specimen Identifier Sequence	(0040,0562)	Z										
Specimen Short Description	(0040,0600)	X								C		

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Specimen Detailed Description	(0040,0602)	X								C		
Specimen Preparation Sequence	(0040,0610)	Z									C	
Slide Identifier	(0040,06FA)	X										
Requested Procedure ID	(0040,1001)	X										
Reason for the Requested Procedure	(0040,1002)	X								C		
Patient Transport Arrangements	(0040,1004)	X										
Requested Procedure Location	(0040,1005)	X										
Reason for Requested Procedure Code Sequence	(0040,100A)	X								C		
Names of Intended Recipients of Results	(0040,1010)	X										
Intended Recipients of Results Identification Sequence	(0040,1011)	X										
Person Identification Code Sequence	(0040,1101)	D										
Person's Address	(0040,1102)	X										
Person's Telephone Numbers	(0040,1103)	X										
Person's Telecom Information	(0040,1104)	X										
Requested Procedure Comments	(0040,1400)	X								C		

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Reason for the Imaging Service Request	(0040,2001)	X								C		
Order Entered By	(0040,2008)	X										
Order Enterer's Location	(0040,2009)	X										
Order Callback Phone Number	(0040,2010)	X										
Order Callback Telecom Information	(0040,2011)	X										
Placer Order Number / Imaging Service Request	(0040,2016)	Z										
Filler Order Number / Imaging Service Request	(0040,2017)	Z										
Imaging Service Request Comments	(0040,2400)	X								C		
Confidentiality Constraint on Patient Data Description	(0040,3001)	X										
Scheduled Procedure Step Start DateTime	(0040,4005)	X						K	C			
Scheduled Procedure Step Expiration DateTime	(0040,4008)	X						K	C			
Scheduled Procedure Step Modification DateTime	(0040,4010)	X						K	C			
Expected Completion DateTime	(0040,4011)	X						K	C			
Referenced General Purpose	(0040,4023)	U		K								

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Scheduled Procedure Step Transaction UID												
Scheduled Station Name Code Sequence	(0040,4025)	X			K							
Scheduled Station Geographic Location Code Sequence	(0040,4027)	X			K							
Performed Station Name Code Sequence	(0040,4028)	X			K							
Performed Station Geographic Location Code Sequence	(0040,4030)	X			K							
Scheduled Human Performers Sequence	(0040,4034)	X										
Actual Human Performers Sequence	(0040,4035)	X										
Human Performer's Organization	(0040,4036)	X										
Human Performer's Name	(0040,4037)	X										
Performed Procedure Step Start DateTime	(0040,4050)	X						K	C			
Performed Procedure Step End DateTime	(0040,4051)	X						K	C			
Procedure Step Cancellation DateTime	(0040,4052)	X						K	C			
Verifying Organization	(0040,A027)	D										
Verifying Observer	(0040,A073)	D										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Sequence												
Verifying Observer Name	(0040,A075)	D										
Author Observer Sequence	(0040,A078)	X										
Participant Sequence	(0040,A07A)	X										
Custodial Organization Sequence	(0040,A07C)	X										
Verifying Observer Identification Code Sequence	(0040,A088)	Z										
Person Name	(0040,A123)	D										
UID	(0040,A124)	U										
Observation UID	(0040,A171)	U		K								
Referenced Observation UID (Trial)	(0040,A172)	U		K								
Observation Date (Trial)	(0040,A192)	X						K	C			
Observation Time (Trial)	(0040,A193)	X						K	C			
Current Observer (Trial)	(0040,A307)	X										
Verbal Source (Trial)	(0040,A352)	X										
Address (Trial)	(0040,A353)	X										
Telephone Number (Trial)	(0040,A354)	X										
Verbal Source Identifier Code Sequence (Trial)	(0040,A358)	X										
Observation Subject UID (Trial)	(0040,A402)	U		K								
Content	(0040,A730)	D									C	

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Sequence												
Template Extension Organization UID	(0040,DB0C)	U		K								
Template Extension Creator UID	(0040,DB0D)	U		K								
Container Component ID	(0050,001B)	X										
Device Description	(0050,0020)	X			K							
Long Device Description	(0050,0021)	X								C		
Tracking UID	(0062,0021)	U		K								
Graphic Annotation Sequence	(0070,0001)	D										C
Content Creator's Name	(0070,0084)	Z/D										
Content Creator's Identification Code Sequence	(0070,0086)	X										
Fiducial UID	(0070,031A)	U		K								
Presentation Display Collection UID	(0070,1101)	U		K								
Presentation Sequence Collection UID	(0070,1102)	U		K								
Storage Media File-set UID	(0088,0140)	U		K								
Icon Image Sequence (see Note 12)	(0088,0200)	X										
Topic Title	(0088,0904)	X										
Topic Subject	(0088,0906)	X										
Topic Author	(0088,0910)	X										
Topic Keywords	(0088,0912)	X										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Digital Signature UID	(0400,0100)	U										
Referenced Digital Signature Sequence	(0400,0402)	X										
Referenced SOP Instance MAC Sequence	(0400,0403)	X										
MAC	(0400,0404)	X										
Modified Attributes Sequence	(0400,0550)	X										
Original Attributes Sequence	(0400,0561)	X										
Instance Origin Status	(0400,0600)	X										
Text String	(2030,0020)	X										
Label Text	(2200,0002)	X/Z								C		
Barcode Value	(2200,0005)	X/Z										
Referenced Frame of Reference UID	(3006,0024)	U		K								
Related Frame of Reference UID	(3006,00C2)	U		K								
First Treatment Date	(3008,0054)	X/D						K	C			
Most Recent Treatment Date	(3008,0056)	X/D						K	C			
Source Serial Number	(3008,0105)	X/Z			K							
Treatment Date	(3008,0250)	X/D						K	C			
Treatment Time	(3008,0251)	X/D						K	C			
RT Plan Label	(300A,0002)	D								C		
RT Plan Name	(300A,0003)	X								C		
RT Plan Description	(300A,0004)	X								C		
RT Plan Date	(300A,0006)	X/D						K	C			

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
RT Plan Time	(300A,0007)	X/D						K	C			
Prescription Description	(300A,000E)	X								C		
Dose Reference UID	(300A,0013)	U		K								
Dose Reference Description	(300A,0016)	X								C		
Fraction Group Description	(300A,0072)	X								C		
Referenced Dose Reference UID	(300A,0083)	U		K								
Treatment Machine Name	(300A,00B2)	X			K							
Beam Description	(300A,00C3)	X								C		
Bolus Description	(300A,00DD)	X								C		
Fixation Device Description	(300A,0196)	X								C		
Shielding Device Description	(300A,01A6)	X								C		
Setup Technique Description	(300A,01B2)	X								C		
Source Manufacturer	(300A,0216)	X			K							
Compensator Description	(300A,02EB)	X								C		
Treatment Position Group Label	(300A,0608)	D								C		
Treatment Position Group UID	(300A,0609)	U		K								
RT Accessory Holder Slot ID	(300A,0611)	Z										
RT Accessory Device Slot ID	(300A,0615)	Z										
Radiation Dose	(300A,0619)	D								C		

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Identification Label												
Radiation Dose In-Vivo Measurement Label	(300A,0623)	D								C		
RT Tolerance Set Label	(300A,062A)	D								C		
Patient Setup UID	(300A,0650)	U		K								
Equipment Frame of Reference Description	(300A,0676)	X								C		
Radiation Generation Mode Label	(300A,067C)	D								C		
Radiation Generation Mode Description	(300A,067D)	Z								C		
Reason for Omission Description	(300C,0113)	X								C		
Reviewer Name	(300E,0008)	X/Z										
Conceptual Volume UID	(3010,0006)	U		K								
Referenced Conceptual Volume UID	(3010,000B)	U		K								
Conceptual Volume Combination Description	(3010,000F)	Z								C		
Constituent Conceptual Volume UID	(3010,0013)	U		K								
Source Conceptual Volume UID	(3010,0015)	U		K								
Conceptual Volume Description	(3010,0017)	Z								C		
Device Alternate	(3010,001B)	Z										

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Identifier												
Device Label	(3010,002D)	D			K							
Referenced Fiducials UID	(3010,0031)	U		K								
User Content Label	(3010,0033)	D								C		
User Content Long Label	(3010,0034)	D								C		
Entity Label	(3010,0035)	D								C		
Entity Name	(3010,0036)	X								C		
Entity Description	(3010,0037)	X								C		
Entity Long Label	(3010,0038)	D								C		
RT Treatment Phase UID	(3010,003B)	U		K								
Manufacturer's Device Identifier	(3010,0043)	Z			K							
Intended Phase Start Date	(3010,004C)	X/D						K	C			
Intended Phase End Date	(3010,004D)	X/D						K	C			
RT Prescription Label	(3010,0054)	D								C		
RT Treatment Approach Label	(3010,0056)	X/D								C		
RT Physician Intent Narrative	(3010,005A)	Z								C		
Reason for Superseding	(3010,005C)	Z								C		
Prior Treatment Dose Description	(3010,0061)	X								C		
Dosimetric Objective UID	(3010,006E)	U		K								
Referenced Dosimetric Objective UID	(3010,006F)	U		K								
Treatment Site	(3010,0077)	D								C		

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Treatment Technique Notes	(3010,007A)	Z								C		
Prescription Notes	(3010,007B)	Z								C		
Fractionation Notes	(3010,007F)	Z								C		
Prescription Notes Sequence	(3010,0081)	Z								C		
Arbitrary	(4000,0010)	X										
Text Comments	(4000,4000)	X										
Results ID Issuer	(4008,0042)	X										
Interpretation Recorder	(4008,0102)	X										
Interpretation Transcriber	(4008,010A)	X										
Interpretation Text	(4008,010B)	X								C		
Interpretation Author	(4008,010C)	X										
Interpretation Approver Sequence	(4008,0111)	X										
Physician Approving Interpretation	(4008,0114)	X										
Interpretation Diagnosis Description	(4008,0115)	X								C		
Results Distribution List Sequence	(4008,0118)	X										
Distribution Name	(4008,0119)	X										
Distribution Address	(4008,011A)	X										
Interpretation ID Issuer	(4008,0202)	X										
Impressions	(4008,0300)	X								C		

Attribute Name	Tag	Basic Prof.	Rtn. Safe Priv. Opt.	Rtn. UIDs Opt.	Rtn. Dev. Id. Opt.	Rtn. Inst. Id. Opt.	Rtn. Pat. Chars. Opt.	Rtn. Long. Full Dates Opt.	Rtn. Long. Modif. Dates Opt.	Clean Desc. Opt.	Clean Struct. Cont. Opt.	Clean Graph. Opt.
Results Comments	(4008,4000)	X								C		
Curve Data	(50xx,xxxx)	X										C
Overlay Data	(60xx,3000)	X										C
Overlay Comments	(60xx,4000)	X										C
Digital Signatures Sequence	(FFFA,FFFA)	X										
Data Set Trailing Padding	(FFFC,FFFC)	X										
Private attributes	*(gggg,eeee) where gggg is odd*	X	C									