

National Institutes of Health

National Institute of Neurological Disorders and Stroke National Institute on Aging



MarkVCID DICOM Anonymization Standard Operating Procedure

Version 1.5, Jan 2020 MarkVCID Consortium

By the MarkVCID Coordinating Center (Christopher A. Mantell)

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DICOM Anonymization Using DicomBrowser

Version 1.5 | Effective Date: 9/24/18 | Planned Review Date: 3/24/20

The procedures in this SOP should be followed exactly. If changes to the SOP are needed, please send suggested edits to the MarkVCID Coordinating Center.

I. Purpose

This guide instructs users in the use of DicomBrowser to remove Personal Health Information (PHI) from DICOM files in preparation for transferring the anonymized files to the MarkVCID shared Globus endpoint.

II. Overview

Anonymization is performed using an application called DicomBrowser, which allows a user to modify the metadata in multiple DICOM files in a single step. This application has a Graphical User Interface (GUI) that allows for a user-friendly experience. To use this application, the user must employ an anonymization script (**anon_for_markvcid.das**) that controls which fields are included in the anonymization process. All PHI will be removed, and users edit the script to include two fields (patient age and patient ID). After editing the script, the anonymization process can be applied to all DICOM files from a patient for the entire scan session. These files should be saved in a separate folder to indicate that the data has been anonymized, which prevents unwanted alteration of the original DICOM files.

III. Procedures

- 1. Download DicomBrowser
 - a. Go to: https://wiki.xnat.org/xnat-tools/dicombrowser
 - **b.** Click to download the installation file for your computer's platform (Windows, Mac, Linux)
- 2. Edit Anonymization Script
 - a. Open the file <anon_for_markvcid.das> in any text editor (Notepad++, VIM, Emacs, Atom, Sublime Text, etc.). This file is available from the <u>MarkVCID Wiki</u> (secure login required) and is used to tell the program which fields to anonymize and whether there are any tag values to be replaced.
 - **b.** Edit the values of the last two lines
 - i. Input the MarkVCID patient ID into tag (0010, 0010)
 - 1. Example: (0010, 0010) := "4cbb32f887"
 - ii. Input the patient age into tag (0010, 1010) in years. This number should be preceded by a "0" and followed by a "Y"
 - 1. Example: For 29 years of age (0010, 1010) := "029Y"

anon_for_markvcid.das - emacs@jazz.nmr.mgh.harvard.edu	\checkmark
File Edit Options Buffers Tools Help	
// DicomBrowser anonymization script	~
<pre>// by Kevin Archie, karchie@npg.wustl.edu</pre>	
<pre>// edited by Graham Warner, gwarner@mgh.harvard.edu</pre>	
<pre>// removes all attributes specified in the</pre>	
<pre>// DICOM Basic Application Level Confidentiality Profile</pre>	
- (0008,0012)	
- (0008,0013)	
- (0008,0020)	
- (0008,0021)	
- (0008,0023)	
- (0008,0024)	
- (0008,0025)	
- (0008,0026)	
- (0008,0027)	
- (0008,0028)	
- (0008,0029)	
- (0008,0030)	
- (0008,0031)	
- (0008,0033)	
- (0008,0081)	
- (0008,0090)	
- (0008,1010)	
- (0008,1030)	
- (0008,1040)	
- (0008,1050)	
- (0008,1070)	
- (0010,0030)	
- (0029,1009)	
(0052 1060)	
- (0022,1000)	
- (0010,0020)	
- (0040,0245)	
- (0040,0254)	
- (0040,0253)	
- (0028,1199)	
(0010,0010) := "PP004" Change these	
(0010,1010) := "030Y" values	
values	•
-: anon_tor_markvcid.das All L6 (Fundamental)	

c. Save the file

- 3. Prepare DICOM Files for Anonymization
 - a. All DICOM files for a SINGLE PATIENT to be anonymized should be contained in a single folder with sub-folders. Typically, these files will already be downloaded from the PACS and separated into scan type (e.g. "T1WTD") subfolders when multiple scan types are present.

0	DICOM_Test		\odot \otimes \otimes
File Edit View Go Bookma	rks Help		
See Back V >>> Forward V	🕆 🕘 😋 🛅 💻 🖻 50% 🔿 List View 🛟 🔍		
Places 🔻 🗶	📝 < 🖾 cym37 Downloads DICOM_Test		4
Computer	Name	▼ Size Type	Date Modified
🗟 cym37	Folder with SINGLE PATIENT to be anonymized	3 items folder	Fri 21 Sep 2018 12:56:35 PM EDT
Desktop	CVR Scan Type	2 items folder	Fri 21 Sep 2018 03:25:20 PM EDT
File System Documents	(* 🛅 010) Bun Number (DICOM Files Inside)	62 items folder	Fri 21 Sep 2018 12:27:09 PM EDT
Downloads		307 items folder	Fri 21 Sep 2018 12:28:50 PM EDT
@ Music	C Diffwrd Scan Type	1 item folder	Fri 21 Sep 2018 03:26:17 PM EDT
log Pictures	Run Number (DICOM Files Inside)	71 items folder	Fri 21 Sep 2018 12:41:21 PM EDT
🗊 Videos	Can Type	1 item folder	Fri 21 Sep 2018 03:25:56 PM EDT
📓 Trash	Run Number (DICOM Files Inside)	705 items folder	Fri 21 Sep 2018 12:44:36 PM EDT
Devices	EP003_MEMPRAGE_4e_p2_1mm_iso_1.dcm-infodump.dat	35.5 kB plain t	ext document Fri 21 Sep 2018 12:44:32 PM EDT
Network	NR.1.3.12.2.1107.5.2.32.35006.20150321100044271644490	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:29 PM EDT
Browse Network	MR.1.3.12.2.1107.5.2.32.35006.20150321100046478144639	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:19 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.20150321100059146045621	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:28 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.20150321100059918545622	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:20 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.20150321100104944246002	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:24 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.20150321100107473246233	211.2 kB DICOM	1 image Fri 21 Sep 2018 12:44:27 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.201503211000294031943347	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:23 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.201503211000294792743348	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:31 PM EDT
	R.1.3.12.2.1107.5.2.32.35006.201503211000301742243419	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:26 PM EDT
	R.1.3.12.2.1107.5.2.32.35006.201503211000301807343420	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:23 PM EDT
	R.1.3.12.2.1107.5.2.32.35006.201503211000314412243496	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:20 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.201503211000314972343497	211.2 kB DICOM	1 image Fri 21 Sep 2018 12:44:29 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.201503211000315230843498	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:31 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.201503211000332152443653	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:20 PM EDT
	R.1.3.12.2.1107.5.2.32.35006.201503211000347949843730	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:27 PM EDT
	R.1.3.12.2.1107.5.2.32.35006.201503211000349193443731	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:27 PM EDT
	R.1.3.12.2.1107.5.2.32.35006.201503211000354563943802	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:28 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.201503211000356109143803	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:27 PM EDT
	NR.1.3.12.2.1107.5.2.32.35006.201503211000356409143804	211.2 kB DICON	1 image Fri 21 Sep 2018 12:44:22 PM EDT
	MR.1.3.12.2.1107.5.2.32.35006.201503211000361276743882	211.2 kB DICOM	1 image Fri 21 Sep 2018 12:44:23 PM EDT
	MR.1.3.12.2.1107.5.2.32.35006.201503211000368954143887	211.2 kB DICOM	1 image Fri 21 Sep 2018 12:44:25 PM EDT
	MR.1.3.12.2.1107.5.2.32.35006.201503211000377810943959	211.2 kB DICOM	1 image Fri 21 Sep 2018 12:44:36 PM EDT
	MR.1.3.12.2.1107.5.2.32.35006.201503211000378857343960	211.2 kB DICOM	1 image Fri 21 Sep 2018 12:44:36 PM EDT
	MR.1.3.12.2.1107.5.2.32.35006.201503211000379822343961	211.2 kB DICOM	1 image Fri 21 Sep 2018 12:44:20 PM EDT

b. Create a separate folder to hold the anonymized DICOM files after the anonymization process is finished. This folder will be turned into a Zip archive and uploaded to the MarkVCID CC via Globus.

The general directory scheme will be: /<Patient_ID>/Scan_type>/<Run_number>-[optional identifier]-anon

The optional identifier is only needed for the diffusion-weighted data. For example: "/4cbb32f887/DiffWTD/1-AP-anon" would be the schema for a single run of a diffusion-weighted MRI scan in the "AP" direction of patient 4cbb32f887 that has already been anonymized.

Note that to correctly handle the "PA" and "AP" diffusion scans, the correct naming convention would be "/4cbb32f887/DiffWTD/1-AP-anon" and "/4cbb32f887/DiffWTD/2-PA-anon" for subject 4cbb32f887.

An example for a single run of CVR data would be: "/4cbb32f887/CVR/1-anon

c. Create a directory tree with the upper level being **/<Patient_ID> and the next** level down being each MRI scan type (e.g., "T1WTD", "DiffWTD", "CVR"). The scan type folder should be named according to the following codes:

Scan Type	Code
T1-weighted / MPRAGE	T1WTD
Cardiovascular Reactivity	CVR
Diffusion weighted	DiffWTD
Fluid Attenuated Inversion Recovery	FLAIR
T2*-weighted / 3D-GRE	T2STARWTD
T2-weighted	T2WTD
Phantom	PHANTOM

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Places 🔻	X 📝 🛛 🖾 cym37 Downloads DICOM_Test			
Computer	Name	▼ Size	Туре	Date Modified
🛅 cym37	v 🦰 4cbb32f887	3 items	folder	Fri 21 Sep 2018 04:32:20 PM EDT
🔯 Desktop		0 items	folder	Fri 21 Sep 2018 03:45:15 PM EDT
File System		0 items	folder	Fri 21 Sep 2018 03:45:20 PM EDT
Documents		0 items	folder	Fri 21 Sep 2018 03:45:25 PM EDT
💽 Downloads 🐻 Music	► 🛅 EP003	3 items	folder	Fri 21 Sep 2018 04:04:39 PM EDT

- 4. Use DicomBrowser to start the anonymization process
 - a. Open DicomBrowser
 - b. Click "File" >> "Open..."

Elie Edit View Help Open Cetto Open.in new window Cetta Send cetta Save cetta Close window cetta	DicomBrowser						\sim \sim \times
Open Octo Tag Name Action Value Obin in new window Ctri-H Ctri-H Ctri-H Ctri-H Ctri-H Send Ctri-H Ctri-H Ctri-H Ctri-H Ctri-H	<u>File E</u> dit View <u>H</u> elp						
Oldan in new window Ctria Sond Ctria Save Ctria Close window Ctria Close	<u>Op</u> en	Ctrl-0	Tag	Name	Action	Value	
Close selected files Sand Ctrl-E Save Ctrl-W	Open in new window	Ctrl-N					
Send Ctris <u>Close window</u> Ctri-W	Close selected files						
Save Cri-s Close window Cri-W	S <u>e</u> nd	Ctrl-E					
Close window ctriw	<u>S</u> ave	Ctrl-S					
	<u>C</u> lose window	Ctrl-W					

c. Select the folder which holds the original DICOM files for a SINGLE PATIENT. Click "**Open**".

•	Select DICOM files	s (×)
Look <u>I</u> n: 🗖 D	ICOM_Test	 A C D B E
4cbb32f887		
File <u>N</u> ame:	EP003	
Files of <u>T</u> ype:	All Files	-
		Open Cancel

- i. After reading the files, the DicomBrowser automatically separates all the files by "Patient ID". These will appear in a white box on the left. Under each Patient ID folder, DICOM files are further separated by "Study" and then by "Series." If you selected a folder with only a SINGLE PATIENT, you should only see one folder tree in the white box on the left.
- ii. Click on a folder on the left and a table should appear on the right with the columns "**Tag**", "**Name**", "**Action**", and "**Value**." This is the metadata for one of the DICOM files for the SINGLE PATIENT.

		DicomBrowser		$\odot \odot $
<u>F</u> ile <u>E</u> dit View <u>H</u> elp				
P T Patient 15.03.21-09:18:15-DST-1.3.12.2.1107.5.2.32.35006	Tag	Name	Action	Value
• F Study 1	(0008.0005)	Specific Character Set	Keep	ISO IR 100
C MR Sories 6	(0008.0008)	Image Type	Keep	ORIGINAL\PRIMARY\M\ND\NORM
CE ND Carias 20	(0008.0012)	Instance Creation Date	Keep	20150321
MR Series 10	(0008.0013)	Instance Creation Time	Keep	118 values: 100040.889000. 100040.905000. 100040.920000. 10004
MR Series 11	(0008.0016)	SOP Class UID	Keep	1.2.840.10008.5.1.4.1.1.4
► MR Series 16	(0008.0018)	SOP Instance UID	Keep	704 values: 1.3.12.2.1107.5.2.32.35006.20150321100029479274334
	(0008.0020)	Study Date	Кеер	20150321
	(0008,0021)	Series Date	Кеер	20150321
	(0008,0022)	Acquisition Date	Keep	20150321
	(0008.0023)	Content Date	Кеер	20150321
	(0008,0030)	Study Time	Keep	092417.791000
	(0008,0031)	Series Time	Keep	100040.873000
	(0008,0032)	Acquisition Time	Keep	3 values: 095426.027500, 095426.030000, 095426.032500
	(0008,0033)	Content Time	Кеер	118 values: 100040.889000, 100040.905000, 100040.920000, 10004
	(0008,0050)	Accession Number	Кеер	
	(0008,0060)	Modality	Кеер	MR
	(0008,0070)	Manufacturer	Keep	SIEMENS
	(0008,0080)	Institution Name	Кеер	Martinos Center Bay 4
	(0008,0081)	Institution Address	Кеер	13th St. 149, Charlestown, MA, US, 02129
	(0008,0090)	Referring Physician's Name	Кеер	=
	(0008,1010)	Station Name	Кеер	BAY40C
	(0008,1030)	Study Description	Кеер	
	(0008,103E)	Series Description	Кеер	MEMPRAGE_4e_p2_1mm_iso
	(0008,1040)	Institutional Department Name	Кеер	Martinos Center
	(0008,1050)	Performing Physician's Name	Кеер	
	(0008,1070)	Operators' Name	Кеер	ara:esp
	(0008,1090)	Manufacturer's Model Name	Кеер	TrioTim
	(0010,0010)	Patient's Name	Кеер	EP003_01
	(0010,0020)	Patient ID	Кеер	15.03.21-09:18:15-DST-1.3.12.2.1107.5.2.32.35006
	(0010,0030)	Patient's Birth Date	Кеер	19640101
	(0010,0040)	Patient's Sex	Кеер	F
	(0010,1010)	Patient's Age	Кеер	051Y
	(0010,1020)	Patient's Size	Keep	1.5494031008333
	(0010,1030)	Patient's Weight	Кеер	66.6780868719
	(0018,0020)	Scanning Sequence	Кеер	GRUR TAGS TO
	(0018,0021)	Sequence Variant	Кеер	SPIMP MIGS TO
	(0018,0022)	scan Options	кеер	
	(0018,0023)	MK ACQUISITION Type	кеер	SU Minute and
	(0018,0024)	bequence Name	кеер	LII304_IIS
	(0018,0025)	Angio Hag Clico Thiskness	кеер	1
	(0018,0050)	Slice Inickness	кеер	1
	(0018,0080)	Repetition time	Кеер	2010 Avaluate 1.64.2.5.5.26.7.22
	(0018,0081)	European Time	Keep	4 values: 1.04, 3.3, 3.30, 7.22
	(0018,0082)	Number of Averages	Keep	1200
	(0018,0083)	wumber of Averages	veeb	1

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d. To change the Patient ID and the age for this patient click "Edit" >> "Apply script..."

0				DicomBrowser		\mathbf{v} $\mathbf{\hat{v}}$
<u>F</u> ile	Edit View Help					
	Undo Ctrl-Z	1.3.12.2.1107.5.2.32.35006	Tag	Name	Action	Value
1. 4	Redo Ctrl-Y		(0008,0005)	Specific Character Set	Кеер	ISO IR 100
II. '		-	(0008,0008)	Image Type	Кеер	ORIGINAL\PRIMARY\M\ND\NORM
	Keep		(0008,0012)	Instance Creation Date	Кеер	20150321
	<u>C</u> lear		(0008,0013)	Instance Creation Time	Кеер	118 values: 100040.889000, 100040.905000, 100040.920000, 10004
	Delete		(0008,0016)	SOP Class UID	Кеер	1.2.840.10008.5.1.4.1.1.4
	Add new attribute Ctrl-I		(0008,0018)	SOP Instance UID	Кеер	704 values: 1.3.12.2.1107.5.2.32.35006.20150321100029479274334
	A number of the second		(0008,0020)	Study Date	Кеер	20150321
	Appn Script		(0008,0021)	Series Date	Кеер	20150321
			(0008,0022)	Acquisition Date	Кеер	20150321
			(0008,0023)	Content Date	Кеер	20150321
			(0008,0030)	Study Time	Кеер	092417.791000
			(0008,0031)	Series Time	Кеер	100040.873000
			(0008,0032)	Acquisition Time	Кеер	3 values: 095426.027500, 095426.030000, 095426.032500
			(0008,0033)	Content Time	Кеер	118 values: 100040.889000, 100040.905000, 100040.920000, 10004
			(0008,0050)	Accession Number	Кеер	
			(0008,0060)	Modality	Кеер	MR
			(0008,0070)	Manufacturer	Кеер	SIEMENS
			(0008,0080)	Institution Name	Кеер	Martinos Center Bay 4
			(0008,0081)	Institution Address	Кеер	13th St. 149,Charlestown,MA,US,02129
			(0008,0090)	Referring Physician's Name	Кеер	
			(0008,1010)	Station Name	Кеер	BAY40C
			(0008,1030)	Study Description	Кеер	
			(0008,103E)	Series Description	Кеер	MEMPRAGE_4e_p2_1mm_iso
			(0008,1040)	Institutional Department Name	Кеер	Martinos Center
			(0008,1050)	Performing Physician's Name	кеер	
			(0008,1070)	Operators' Name	кеер	ara:esp
			(0008,1090)	Manufacturer's Model Name	кеер	Inolim FR002-01
			(0010,0010)	Patient's Name	кеер	EP003_01
			(0010,0020)	Patient ID	кеер	15.03.21-09:18:15-051-1.3.12.2.1107.5.2.32.35000
			(0010,0030)	Patient's Birth Date	Кеер	19640101
			(0010,0040)	Patient's Sex	Кеер	F
			(0010,1010)	Patient's Age	Keep	1 5404031008333
			(0010,1020)	Patient's Weight	Keep	66 6700960710
			(0010,1030)	Scopping Soguence	Keep	CDID
			(0018,0020)	Sequence Variant	Keep	
			(0018,0021)	Scon Options	Keep	
			(0018,0022)	MR Acquisition Type	Keep	3D
1			(0018 0024)	Sequence Name	Keen	tfl3d4 ns
1			(0018 0025)	Angio Flag	Keen	N
			(0018.0050)	Slice Thickness	Keep	1
1			(0018.0080)	Repetition Time	Keep	2510
1			(0018.0081)	Echo Time	Keep	4 values: 1.64, 3.5, 5.36, 7.22
1			(0018,0082)	Inversion Time	Keep	1200
			(0018,0083)	Number of Averages	Keep	1

e. You will be asked to select the anonymization script location. Select <anon_for_markvcid.das>. Click "Open".

	Opening metadata modifie	ation script	×
Look <u>I</u> n: 📑 D	ocuments)—
anon_for_m	arkvcid.das		
Data Analy	st II.txt		
Python_Clo	udant.png		
File <u>N</u> ame:	anon_for_markvcid.das		
Files of <u>T</u> ype:	All Files		•
			d file

f. Click "All files"



- i. ***If DicomBrowser reads multiple Patient IDs, as indicated by multiple patient folders in the white box on the left, you may not be working with DICOM files for a SINGLE PATIENT. You can select only the patient you want to anonymize with the values that you put into the anonymization script by selecting the patient folder and clicking on "Selected files only" after opening the anonymization script. PLEASE ENSURE THAT YOU DON'T REPLACE AGE AND PATIENT ID VALUES ACROSS MULTIPLE PATIENTS!***
- g. Check to see that the script worked. You should see some tags get changed in the "Action" and "Value" columns to "Delete" and "(deleted)", respectively.

0		DicomBrowser		\odot \odot
<u>F</u> ile <u>E</u> dit View <u>H</u> elp				
P T Patient 15.03.21-09:18:15-DST-1.3.12.2.1107.5.2.32.35006	Tag	Name	Action	Value
• 📑 Study 1	(0008,0005)	Specific Character Set	Кеер	ISO IR 100
or CT MR Series 6	(0008,0008)	Image Type	Кеер	ORIGINAL\PRIMARY\M\ND\NORM
C T MR Series 10	(0008,0012)	Instance Creation Date	Delete	(deleted)
CE MD Carles 11	(0008,0013)	Instance Creation Time	Delete	(deleted)
MR Series II	(0008,0016)	SOP Class UID	Кеер	1.2.840.10008.5.1.4.1.1.4
• MR Series 16	(0008,0018)	SOP Instance UID	Delete	(deleted)
	(0008,0020)	Study Date	Delete	(deleted)
	(0008,0021)	Series Date	Delete	(deleted)
	(0008,0022)	Acquisition Date	Delete	(deleted)
	(0008,0023)	Content Date	Delete	(deleted)
	(0008,0024)	Overlay Date	Delete	(deleted)
	(0008,0025)	Curve Date	Delete	(deleted)
	(0008,0026)	?	Delete	(deleted)
	(0008,0027)	?	Delete	(deleted)
	(0008,0028)	?	Delete	(deleted)
	(0008,0029)	?	Delete	(deleted)
	(0008,0030)	Study Time	Delete	(deleted)
	(0008,0031)	Series Time	Delete	(deleted)
	(0008,0032)	Acquisition Time	Delete	(deleted)
	(0008,0033)	Content Time	Delete	(deleted)
	(0008,0050)	Accession Number	Кеер	
	(0008,0060)	Modality	Кеер	MR
	(0008,0070)	Manufacturer	Кеер	SIEMENS
	(0008,0080)	Institution Name	Delete	(deleted)
	(0008,0081)	Institution Address	Delete	(deleted)
	(0008,0090)	Referring Physician's Name	Delete	(deleted)
	(0008,1010)	Station Name	Delete	(deleted)
	(0008,1030)	Study Description	Delete	(deleted)
	(0008,103E)	Series Description	Keep	MEMPRAGE_4e_p2_Imm_iso
	(0008,1040)	Institutional Department Name	Delete	(Deteleb)
	(0008,1050)	Performing Physician's Name	Delete	
	(0008,1070)	Operators Name	Delete	(deleted)
	(0008,1090)	Manufacturer's Model Name	Keep	1001m
	(0010,0010)	Patient S Name	Assign	(dolotod)
	(0010,0020)	Patient iD Patient's Pirth Date	Delete	(deleted) Now Apopymized Values
	(0010,0030)	Patient's Sev	Keen	
	0010 1010)	Patient's Age	Assian	0297
	(0010 1020)	Patient's Size	Keen	1 5494031 008333
	(0010,1020)	Patient's Weight	Keen	66.6780868719
	(0018 0020)	Scanning Sequence	Keen	GRUB
	(0018.0021)	Sequence Variant	Keep	SPIMP
	(0018,0022)	Scan Options	Keep	IR
	(0018,0023)	MR Acquisition Type	Keep	3D
	(0018,0024)	Sequence Name	Кеер	tfl3d4 ns
	(0018,0025)	Angio Flag	Keep	N
	(0018,0050)	Slice Thickness	Кеер	1
	(0018,0080)	Repetition Time	Keep	2510
	(0018,0081)	Echo Time	Keep	4 values: 1.64, 3.5, 5.36, 7.22
	(0018,0082)	Inversion Time	Кеер	1200
	(0018,0083)	Number of Averages	Кеер	1

- h. Click "File" >> "Save..."
- i. Select "Write files in adjacent directory with suffix:" in the top dropdown menu and "Write all loaded files" in the bottom dropdown menu.

Save DICOM files	×
Write files in adjacent directory with suffix: -	Browse
Write all loaded files Cancel	Save

If you loaded files for multiple patients (see above), you should make sure you only save the anonymized DICOM files for a single patient by first selecting the files, and making sure "Write only selected files" is selected in the bottom dropdown menu

j. Click "Save" In the "Save DICOM files" popup menu. This will create a new folder with the same name in the same location as the folder with the original DICOM files. It will be named the same but have "-anon" attached to the name.

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	► 🛅 010	62 items folder Fri 21 Sep 2018 12:27:09 PM EE	тс
	010-anon	60 items folder Fri 21 Sep 2018 05:10:36 PM EE	эт
		307 items folder Fri 21 Sep 2018 12:28:50 PM EE	тс
		305 items folder Fri 21 Sep 2018 05:10:43 PM EE	тс
	▼ C DiffWTD	2 items folder Fri 21 Sep 2018 05:10:43 PM EE	тс
	▶ ○ 016	71 items folder Fri 21 Sep 2018 12:41:21 PM EE	тс
	▶ 🛅 016-anon	70 items folder Fri 21 Sep 2018 05:10:44 PM EE	тс
	T1WTD	2 items folder Fri 21 Sep 2018 05:10:44 PM EE	тс
	► 🛅 006	705 items folder Fri 21 Sep 2018 12:44:36 PM EE	т
	006-anon	704 items folder Fri 21 Sep 2018 05:10:47 PM EE	т

- **k.** Move the anonymized DICOM folders into their corresponding scan type directories in the folder that you created in step 3b.
 - i. If your scan session contains a CVR scan, please put the **.fcd** file in the CVR directory in the same level as the anonymized run folders. The naming convention is CVR-1.fcd for a single run. If multiple CVR runs were performed, name each successive fcd file as CVR-#.fcd for the file associated with run number #.



Rename the folders by <**run number**>-anon (e.g., "2-anon"). Note that "run number" refers to the number of scans you acquired of a certain scan type. For example, if you acquired three CVR scans, you would label the folders "1-anon", 2-anon", and "3-anon" under the "CVR" folder.

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Computer	Name	Size	Туре	Date Modified
a cym37	v 🛅 4cbb32f887	3 items	folder	Fri 21 Sep 2018 04:32:20 PM EDT
🛅 Desktop	V CVR	2 items	folder	Fri 21 Sep 2018 03:45:15 PM EDT
File System	D10-anon Rename as "1-anon"	60 items	folder	Fri 21 Sep 2018 05:10:36 PM EDT
Documents	Oll-anon — Rename as "2-anon"	305 items	folder	Fri 21 Sep 2018 05:10:43 PM EDT
Music	v 🛅 DiffWTD	1 item	folder	Fri 21 Sep 2018 03:45:20 PM EDT
Pictures	• anon — Rename as "1-anon"	70 items	folder	Fri 21 Sep 2018 05:10:44 PM EDT
🛅 Videos	T1WTD	1 item	folder	Fri 21 Sep 2018 03:45:25 PM EDT
Trash	• 1006-anon — Rename as "1-anon"	704 items	folder	Fri 21 Sep 2018 05:10:47 PM EDT

I. Finally create a Zip archive of the SINGLE PATIENT folder and name the archive with the data registration document ID that was emailed to you when you registered the scan session, e.g. "a7b560abdca414e2a2a00600a901ba7b.zip". Transfer the archive using Globus to the MarkVCID shared Globus endpoint (markvcid#martinosglobus) into the "register" folder.

