

LONI De-Identification Policy

The following defines how different file formats are de-identified with LONI tools. Each metadata attribute of each file can have the following operations performed:

<u>Operation</u>	<u>Description</u>
keep	Copy the attribute as is.
Remove	Replace the attribute with a null or zero.
Replace	Replace the attribute with a user-specified attribute.

The default de-identification policy for an attribute (e.g., any attribute not listed below) is "remove."

DISCLAIMER: The following tables list a SUGGESTED policy for de-identification of patient information. Because it is possible to alter the value of any metadata attribute from its intended meaning, this policy cannot guarantee 100% de-identification on every file it is applied to. However, together with an administrator who is trained to manually inspect attributes, this policy can facilitate the de-identification process.

DICOM (MR):

<u>Name</u>	<u>Policy</u>	<u>Description</u>
0002,0001	keep	File Meta Information Version
0002,0010	keep	Transfer Syntax UID
0008,0008	keep	Image Type
0008,0020	keep	Study Date
0008,0021	keep	Series Date
0008,0022	keep	Acquisition Date
0008,0023	keep	Image Date
0008,0030	keep	Study Time
0008,0031	keep	Series Time
0008,0032	keep	Acquisition Time
0008,0033	keep	Image Time
0008,0060	keep	Modality
0008,0070	keep	Manufacturer
0008,0080	keep	Institution Name
0008,1030	keep	Study Description
0008,103E	keep	Series Description
0008,1080	keep	Admitting Diagnosis
0008,1090	keep	Manufacturer's Model Name
0010,0020	replace	Patient ID
0010,0030	keep	Patient's Birth Date
0010,0032	keep	Patient's Birth Time
0010,0040	keep	Patient's Sex
0010,1010	keep	Patient's Age
0010,1020	keep	Patient's Size
0010,1030	keep	Patient's Weight
0010,2160	keep	Ethnic Group
0010,2180	keep	Occupation
0018,0020	keep	Scanning Sequence
0018,0021	keep	Sequence Variant
0018,0022	keep	Scan Options
0018,0023	keep	MR Acquisition Type
0018,0024	keep	Sequence Name
0018,0025	keep	Angio Flag
0018,0050	keep	Slice Thickness
0018,0080	keep	Repetition Time
0018,0081	keep	Echo Time
0018,0082	keep	Inversion Time
0018,0083	keep	Number of Averages
0018,0084	keep	Imaging Frequency

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0018,0085	keep	Imaged Nucleus
0018,0086	keep	Echo Number(s)
0018,0087	keep	Magnetic Field Strength
0018,0088	keep	Spacing Between Slices
0018,0089	keep	Number of Phase Encoding Steps
0018,0091	keep	Echo Train Length
0018,0093	keep	Percent Sampling
0018,0094	keep	Percent Phase Field of View
0018,0095	keep	Pixel Bandwidth
0018,1020	keep	Software Version(s)
0018,1030	keep	Protocol Name
0018,1050	keep	Spatial Resolution
0018,1060	keep	Trigger Time
0018,1062	keep	Nominal Interval
0018,1080	keep	Beat Rejection Flag
0018,1081	keep	Low R-R Value
0018,1082	keep	High R-R Value
0018,1083	keep	Intervals Acquired
0018,1084	keep	Intervals Rejected
0018,1085	keep	PVC Rejection
0018,1086	keep	Skip Beats
0018,1088	keep	Heart Rate
0018,1090	keep	Cardiac Number of Images
0018,1094	keep	Trigger Window
0018,1100	keep	Reconstruction Diameter
0018,1250	keep	Receiving Coil
0018,1251	keep	Transmitting Coil
0018,1310	keep	Acquisition Matrix
0018,1312	keep	Phase Encoding Direction
0018,1314	keep	Flip Angle
0018,1315	keep	Variable Flip Angle Flag
0018,1316	keep	SAR
0018,1318	keep	dB/dt
0018,5100	keep	Patient Position
0020,0013	keep	Image Number
0020,0020	keep	Patient Orientation
0020,0032	keep	Image Position (Patient)
0020,0037	keep	Image Orientation (Patient)
0020,0060	keep	Laterality
0020,0100	keep	Temporal Position Identifier
0020,0105	keep	Number of Temporal Positions
0020,0110	keep	Temporal Resolution
0020,1002	keep	Images in Acquisition
0020,104	keep	Position Reference Indicator
0020,1041	keep	Slice Location
0028,0002	keep	Samples per Pixel
0028,0004	keep	Photometric Interpretation
0028,0010	keep	Rows
0028,0011	keep	Columns
0028,0030	keep	Pixel Spacing
0028,0100	keep	Bits Allocated
0028,0101	keep	Bits Stored
0028,0102	keep	High Bit
0028,0103	keep	Pixel Representation
0028,0106	keep	Smallest Image Pixel Value
0028,0107	keep	Largest Image Pixel Value
0028,0120	keep	Pixel Padding Value
0028,1050	keep	Window Center

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0028,1051 keep Window Width

ANALYZE 7.5:

<u>Name</u>	<u>Policy</u>	<u>Description</u>
HEADER_KEY		Describes the contents of the header.
sizeof_hdr	keep	The size of the header in bytes.
Extents	keep	Minimum extent size.
Regular	keep	If equal to 'r', then all images and volumes are the same size.
IMAGE_DIMENSION		Describes the image sizes.
dim_0	keep	Number of dimensions in the file (usually 4).
dim_1	keep	Image X dimension; number of pixels in an image row.
dim_2	keep	Image Y dimension; number of pixel rows in a slice.
dim_3	keep	Image Z dimension; number of slices in a volume.
dim_4	keep	Time points; number of volumes in the file.
dim_5	keep	Fifth file dimension.
dim_6	keep	Sixth file dimension.
dim_7	keep	Seventh file dimension.
vox_units	keep	The spatial units of measure for a voxel.
DataType	keep	Data type for this image set.
Bitpix	keep	Number of bits per pixel.
pixdim_1	keep	Voxel width in millimeters.
pixdim_2	keep	Voxel height in millimeters.
pixdim_3	keep	Slice thickness in millimeters.
pixdim_4	keep	Time in milliseconds.
pixdim_5	keep	Real world measurement of the fifth file dimension.
pixdim_6	keep	Real world measurement of the sixth file dimension.
pixdim_7	keep	Real world measurement of the seventh file dimension.
vox_offset	keep	Byte offset in the corresponding '.img' file at which the voxels start.
roi_scale	keep	Region-of-interest scale.
funused1	keep	SPM scale factor.
Glmax	keep	The maximum pixel value for the entire file.
Glmin	keep	The minimum pixel value for the entire file.
DATA_HISTORY		Describes the history of the data.
Orient	keep	Slice orientation for this dataset.
Originator	keep	SPM origin.
patient_id	replace	Id of the patient.
exp_date	keep	Date.
exp_time	keep	Time.
vols_added	keep	Volumes added.

MINC:

<u>Name</u>	<u>Policy</u>	<u>Description</u>
DIMENSIONS		Dimensions used by all the variables.
Xspace	keep	X dimension.
Yspace	keep	Y dimension.
Zspace	keep	Z dimension.

GLOBAL_ATTRIBUTES

Attributes that apply globally.
History remove History of changes made to the file.

VARIABLES

Sets of attributes and data.
 Xspace Dimension and coordinate variable for the x axis.

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Varid	keep	Origin of the variable.
Varitype	keep	Type for the variable.
Version	keep	File version.
Comments	keep	Text included with this variable.
Spacing	keep	Denotes a regular or irregular spaced grid.
Alignment	keep	Position of the coordinates relative to each sample.
step	keep	Step between samples.
Start	keep	Coordinate of the index 0 of the dimension.
direction_cosines	keep	Direction cosines of the axes.
Units	keep	Units of the variable values.
Yspace		Dimension and coordinate variable for the y axis.
Varid	keep	Origin of the variable.
Varitype	keep	Type for the variable.
Version	keep	File version.
Comments	keep	Text included with this variable.
Spacing	keep	Denotes a regular or irregular spaced grid.
Alignmen	keep	Position of the coordinates relative to each sample.
Step	keep	Step between samples.
Start	keep	Coordinate of the index 0 of the dimension.
direction_cosines	keep	Direction cosines of the axes.
Units	keep	Units of the variable values.
Space		Dimension and coordinate variable for the z axis.
Varid	keep	Origin of the variable.
Varitype	keep	Type for the variable.
Version	keep	File version.
Comments	keep	Text included with this variable.
Spacing	keep	Denotes a regular or irregular spaced grid.
Alignment	keep	Position of the coordinates relative to each sample.
Step	keep	Step between samples.
Start	keep	Coordinate of the index 0 of the dimension.
direction_cosines	keep	Direction cosines of the axes.
Units	keep	Units of the variable values.
Image		Image variable.
Parent	keep	Name of the parent variable of this variable.
Varid	keep	Origin of the variable.
Varitype	keep	Type for the variable.
Version	keep	File version.
Complete	keep	Whether the variable has been written in its entirety.
Signtype	keep	Specifies whether or not the variable data is signed.
valid_range	keep	Minimum and maximum valid values.
image-max	keep	Variable that stores the real value maximum for the image data.
image-min	keep	Variable that stores the real value minimum for the image data.
Rootvariable		Root of the data hierarchy.
Varid	keep	Origin of the variable.
Varitype	keep	Type for the variable.
Version	keep	File version.
Parent	keep	Name of the parent variable of this variable.
Children	keep	Names of the variables in the first level.
image-max		Variable that stores the real value maximum for the image data.
Varid	keep	Origin of the variable.
Varitype	keep	Type for the variable.
Version	keep	File version.
Parent	keep	Name of the parent variable of this variable.
image-min		Variable that stores the real value minimum for the image data.
Varid	keep	Origin of the variable.
Varitype	keep	Type for the variable.
Version	keep	File version.
Parent	keep	Name of the parent variable of this variable.

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FillValue	keep	Number used to fill in values that are not explicitly written.
Patient		Information variable about the patient.
Parent	keep	Name of the parent variable of this variable.
Varid	keep	Origin of the variable.
Vartype	keep	Type for the variable.
Version	keep	File version.
Identification	replace	Identification information for the patient.
Birthdate	keep	Patient's birth date.
Age	keep	Age of the patient.
Weight	keep	Patient's weight in kilograms.
Sex	keep	Sex of the patient.
study		
parent	keep	Name of the parent variable of this variable.
Varid	keep	Origin of the variable.
Vartype	keep	Type for the variable.
Version	keep	File version.
Modality	keep	Imaging modality.
start_time	keep	Time and date of the start of the study.
Procedure	keep	Procedure employed.
Acquisition		Information variable about the acquisition.
Parent	keep	Name of the parent variable of this variable.
Varid	keep	Origin of the variable.
Vartype	keep	Type for the variable.
Version	keep	File version.
repetition_time	keep	Time in seconds between pulse sequences.
echo_time	keep	Time in seconds between the middle of a 90 degree pulse and the middle of spin echo production.
inversion_time	keep	Time in seconds after the middle of the inverting RF pulse to the middle of the 90 degree pulse to detect the amount of longitudinal magnetization.
flip_angle	keep	Flip angle.
scanning_sequence	keep	Description of the type of data taken.