MRI

SAS Dataset Name: MRI

General description:
The MRI datasets contain meta-data (image descriptive data) describing the type, acquisition and quality of MRI images that may be useful for deciding which images to request and examine. It includes information on MR series type (e.g., R SAG 3D DESS WE; L COR IW TSE; etc), date of imaging, MR technologist ID, side (left, right, bilateral), whether the MRI exam was completed for that participant, and if not, why not. In addition, the datasets contain a quality rating (QCRESLT). Two free-text comment fields, MRCOMM1 and MRCOMM2 are no longer released because they sometimes contained possibly identifying information. In addition they were not image-specific, but rather were applied to all images received or QC'd at the same time for a given participant, so were of limited usefulness.

If a participant's MR scans for a given visit have been released for public use, then MRI meta-data for this participant and visit will be included in the latest version of the MRI dataset for that visit. When a large image group is released, such as images for half of the cohort or all of the cohort for a particular visit, there will be one record per image expected for each participant in the group, regardless of whether that image was actually collected on that participant (e.g., participant refused all images, or missed the visit) or is available for release.

The guidelines for which images were released can be summarized as follows:

- If an acceptable* instance of a particular series type is available for a particular participant at a given visit, then no unacceptable instance of that series is released for that visit.
- If more than one acceptable instance of a particular series type was obtained for any visit, then all of these acceptable instances are released**.
- If no acceptable instance of a series type is available for a given visit, then all unacceptable instances of that series are released for that visit, since some features may be better visualized on one instance and others on another.

* either 'acceptable' based on central QA review or 'accepted by default' when not reviewed centrally.
** this rule can be broken where there is a Sagittal DESS acquired with the scanner gradients out of specification on one date, but a repeated Sagittal DESS of the same knee acquired with the scanner gradients in specification on a later date (since the earlier scan is more appropriate for visual inspection and the later for quantitative measurements). In such cases, the earlier scan may have an unacceptable rating and the later scan an acceptable rating.

Two meta-data variables have been included in the biomarkers datasets because they belong in a one-record-per-participant dataset. They are MRSEQNL and MRSEQNR,

and give the number of unique MRI series obtained for the left and right knees, respectively.

MRI Meta-data:
Information about MRI meta-data for baseline can be found in MriMetadataDescrTrackingBaseline.pdf

Information about MRI meta-data for the 12-month visit can be found in MriMetadataDescrTracking12mo.pdf

Information about MRI meta-data for the 18- and 30-month visit can be found in MriMetadataDescrTracking18_30mo.pdf

Information about MRI meta-data for the 24-month visit can be found in MriMetadataDescrTracking24mo.pdf

Information about MRI meta-data for the 36-month visit can be found in MriMetadataDescrTracking36mo.pdf

Information about MRI meta-data for the 48-month visit can be found in MriMetadataDescrTracking48mo.pdf

Information about MRI meta-data for the 72-month visit can be found in MriMetadataDescrTracking72mo.pdf

Information about MRI meta-data for the 96-month visit can be found in MriMetadataDescrTracking96mo.pdf

Data Structure/Contents:
Meta-data records are typically expected in the MRI datasets for all 12 knee MRI series (including multiplanar reformats) acquired for each participant at baseline. Two MRI series are acquired on only one knee (right or left depending on a number of factors) so there will typically be 2 additional dummy records corresponding to these series that indicate that they were not acquired for the contralateral side. Thigh MRI sequences are released as of version 0.2.2 and 1.2.1. Generally these consist of the Axial Thigh T1 series and an OAI Prescription scan, which shows the levels of the axial slices overlaid on the localizer sequence as an anatomic reference. Prescription scans were not transferred from the outset, so a number of these scans are missing from the baseline MRI00 dataset. There can also be additional records with MRI meta-data when there are multiple acceptable or unacceptable images for a series type that have been released. When an expected MRI series is missing, a dummy record in a MRI dataset for this series indicates that it is missing (see below). Finally, although localizers are included in the image sets, no meta-data records are generated for these localizers.

The variables uniquely identifying a record in these datasets are ID, MEXAMTP, and MRBARCD (MEXAMTP is not needed for uniqueness if focusing on completed images only). The datasets are sorted by ID and MRBARCD. ID can be used to merge/join to data in other non-imaging datasets. The data can be used to select a desired set of series to examine using the barcode, MRBARCD, to identify the corresponding DICOM image file for the series (the DICOM header ACCESSIONNUMBER contains the equivalent 12-digit version of the barcode).

If an OAI MRI series is not available for a participant at a given visit because the MRI examination was not done at all, was stopped early for some reason, or that particular MRI series was lost, the series is represented in the dataset by a dummy record, with MRCOMP=0 (no) and MNDREAS giving the reason the MRI series was not done. The rest of the variables, other than ID, side (MRSIDE), and exam type (MEXAMTP) will be missing. Again, only participants whose images have been released for public use are represented in these datasets. In releases 0.1.1 and 1.1.1, refused images were designated using the SAS special missing value .R (i.e., MNDREAS=.R). As of releases 0.2.1 and 1.1.2, this value has been changed to 6 because it is not strictly a missing value.

A full list and description of all the variables contained in these datasets can be found in the contents.pdf.

Condition of data:

- **Known data errors:** problems/cautions for use are listed by variable in the "Release Comments."
- **Dataset strengths/weaknesses:** All OAI enrollees should have had a baseline MRI within $\pm$ 7 days of their enrollment visit. If an acceptable MRI was not obtained within this period, every effort was made to reschedule the exam as soon as possible, and no later than 6 months after the enrollment date. However, 5 participants never had a baseline MRI but were nonetheless enrolled. Similarly, all participants who had an 18-month or 30-month interim visit should have had a MRI. However, 1 participant at the 18-month interim visit and 11 at the 30-month interim visit did not have MRIs, although the MRI was the primary reason for the visit. All participants whose images have been released for public use are represented in these datasets by a record for each OAI MR series and each leg. For all visits, participants who did not have MRIs are represented by 14 dummy records, one for each expected sequence, in the respective MRI datasets.

General strategies for use:

When using with images, merge/join by ID and barcode (MRBARCD).

Analysts are encouraged to always output and view SAS variable labels in their entirety to ensure important information about the variables is not lost. The maximum SAS label length is 160 characters.