The American College of Radiology

National Mammography Database

NMD 3.x File Specifications Supplemental Information

November 15, 2022

American College of Radiology
1891 Preston White Drive
Reston, VA 20191-4397

Revisions

Date	Description of Revisions
November 15, 2022	

1. Background

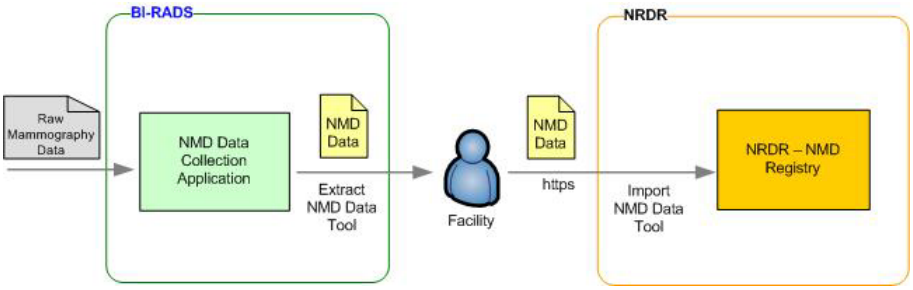
The ACR National Mammography Database (NMD™) is a data registry created for quality improvement purposes which allows facilities to benchmark their results against similar facilities. Participating facilities should submit their patients' breast imaging data to the registry at least every quarter. Data must be formatted according to the file specifications posted on the NMD Data Submission Overview page of the National Radiology Data Registry (NRDR™) knowledge base.

There are 2 major versions of the NMD file format:

- Version 2.x (that is, either Version 2.0 or Version 2.2) corresponds to BI-RADS 4th Edition.
- Version 3.x (that is, either Version 3.0 or Version 3.4) corresponds to BI-RADS 5th Edition.

This document supplements the Version 3.x file specifications with descriptions of relationships among the data elements and of how certain clinical scenarios should be represented in the file. There is no corresponding document for Version 2.x files.

2. Data Transmission Process Flow



Process Flow:

1. The facility requests the NMD Data Collection Application to generate an NMD data extract based on a specified date range of the examination date. The NMD Data Collection Application is a software application provided by a third party vendor or developed by the facility.

2. The NMD Data Collection Application generates a text file containing exam data.

3. The facility user saves the text file.

4. The facility user logs on to the NMD website.

5. The facility user imports the text file saved in Step 3 to the NMD registry by clicking the "Upload Data" link on the NMD website.

As an alternative to using a data collection application, the facility user can download a template in Excel format from the NRDR knowledge base website, populate the template manually, and upload the template as in Steps 4 and 5 above. The ability to transmit data using web services is also available.

3. NMD Data File Specification

The NMD data file specifications are as follows:

1. The data file is a delimited text file.
2. The maximum recommended file size is 40 megabytes.
3. The filename extension is **.txt**.
4. The file naming convention is `nmd_<freetext>` where `<freetext>` is an alphanumeric string that uniquely identifies the file. File names cannot be used more than once. The NMD upload process will prepend the facility's NRDR facility ID to the file name so that the files can be distinguished among facilities.
5. The data file may contain one or more records.
6. Each line contains one and only one record. The record delimiter is the CARRIAGE RETURN character followed by the LINE FEED character (CR LF).
7. Each record begins at the first position of a line.
8. Each record contains all the required, conditional, and optional fields listed in the file specifications, even if their values are null. The SPACE character should not be used to represent the null value.
9. Each field is separated by the vertical bar character '|'. Version 3.0 files must have 89 vertical bars, separating 90 fields. Version 3.4 files must have 108 vertical bars, separating 109 fields.
10. Each record begins with **3.0** or **3.4**, that is, a version number that corresponds to BI-RADS® 5th Edition. The file must not contain records in formats from more than one version.
11. The last value on each line of a Version 3.0 file, before the CARRIAGE RETURN character, is **1**, **2**, **3** or **99**, depending on the value of the "Distant Metastases" field. The last value on each line of a Version 3.4 file, before the CARRIAGE RETURN character, is one of the permitted values for "Method of detection". If "Method of detection" is not reported, that is, null, then the last value before the CARRIAGE RETURN character is a vertical bar.

Example:

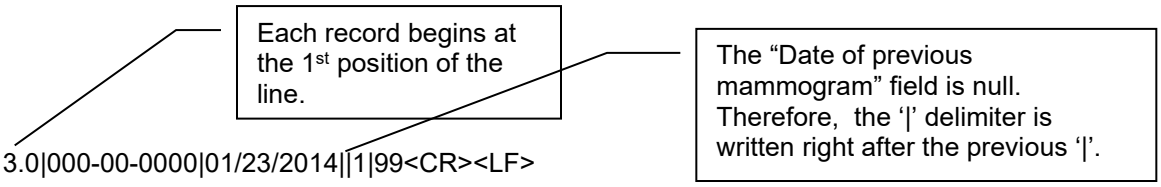
Consider the following hypothetical NMD data elements:

Version number,
Patient's social security number,
Date of examination,
Date of previous mammogram,
Indication for exam, and
Distant metastases

Let's say we have the following record:

Version number: 3.0
Patient's social security number: 000-00-0000
Date of examination: 01/23/2014
Date of previous mammogram: <null>
Indication for exam: 1 *(screening)*
Distant metastases: 99 *(not applicable)*

A valid record structure on the text file will look like:



4. Information regarding specific data elements

(1) Laterality of audit data

Software should have breast-level or patient-level auditing as a choice at initial set-up of the software, where a facility-wide selection is made that will apply to all data entry for all interpreting physicians. There also should be provision for a facility to change this selection facility-wide. If the facility has chosen breast-level auditing, then the value of "Laterality of audit data" should be **1** (separate-breast assessment data). Otherwise, the value should be **2** (patient-level assessment data).

Certain NMD fields are specified as "left breast", "right breast" or "patient level". For separate-breast assessment data collection ("Laterality of audit data = **1**), either "left breast" or "right breast" fields must be populated; patient-level data are optional. For patient-level assessment data collection ("Laterality of audit data" = **2**), "patient level" fields must be populated; breast-level data are optional.

NMD measures are calculated at the patient level. Consequently, for records where "Laterality of audit data" = **1**, only "left breast" or "right breast" data will be used in the calculations, depending on which breast has the assessment of most concern. "Patient level" fields in such records will be ignored. Conversely, for records where "Laterality of audit data" = **2**, "left breast" and "right breast" fields will be ignored.

(2) Combination examinations

Software should have component-level or combination-level auditing as a choice at initial set-up of the software, where a facility-wide selection is made that will apply to all data entry for all interpreting

physicians. There also should be provision for a facility to change this selection facility-wide. If the facility has chosen component-level auditing, then the value of "Combination exams" should be **1** (component-level assessment data). Otherwise, the value should be **2** (combination-level assessment data).

For **component-level** data, each component of a combination exam will generate a separate record. For example, a mammography / US combination exam will generate one record for the mammography component, and one record for the US component. The "assessment" fields in the mammography record will show the assessment from the mammography component only, while the US record will show the assessment from the US component only. The "modality" fields will show **1** (Mammography) and **2** (Ultrasound), respectively. The "overall assessment" fields in both records will show the overall assessment from the combination exam.

The "assessment" fields, the "modality" fields, and other fields specific to the component exam are the only fields that will differ between the two records. The "overall assessment" and all other fields will be identical.

For **combination-level** data, only one record per exam will be generated, regardless of the number of components. The "assessment" fields will show the overall assessment from the combination exam. The "modality" field will show a value from **4** to **7**, depending on the combination of modalities used. The overall assessment may also appear in the "overall assessment" fields, but it must be identical to the assessment in the "assessment" fields.

(3) Physician identifier

The "Follow-up and Outcome Monitoring" section of BI-RADS describes several different methods of attributing assessments to individual radiologists. Depending on the method chosen by the facility, up to three radiologists may assume responsibility for assessments. Consequently, the following fields are repeated three times, in order to report the individual assessment of up to three radiologists:

Physician identifier
Physician-level assessment – Left breast
Physician-level assessment – Left breast – Subcategory of category 4
Physician-level assessment – Right breast
Physician-level assessment – Right breast – Subcategory of category 4
Physician-level assessment – Patient level
Physician-level assessment – Patient level – Subcategory of category 4

If "Physician identifier" is reported with no corresponding assessment, then the assessment reported for the exam will apply to the physician whose assessment was not reported. Physicians who do not assume responsibility for an assessment should not be reported.

(4) "Applies to" columns

There are three columns in the file specifications indicating the modalities to which each field applies: "Mammography", "US", and "MRI". These columns indicate how fields are cross-checked with Field 34, "Modality". For example, if "Modality" = **3** (MRI), then all fields where **Applies to MRI = No** should be null.

(5) "NMD Field Number Version 2.0" column

The "NMD Number V2" column shows the number of the field in NMD Version 2.0 that approximates the field in Version 3.x, if applicable. In some cases, specifications have changed from Version 2.0 to Versions 3.x.

(6) Standard screening mammography imaging

Software should have "Standard screening mammography imaging" as a choice at initial set-up of the software, where a facility-wide selection is made that will apply to all data entry for all interpreting physicians. There also should be provision for a facility to change this selection facility-wide. This field

indicates whether the facility performs BI-RADS® standard screening mammography imaging, as described in *ACR Practice Guideline for the Performance of Screening and Diagnostic Mammography*[1] (1 CC and 1 MLO per breast), including additional images only as needed to overcome technical deficiency or inadequate tissue coverage.

(8) Standard screening ultrasound imaging

Software should have "Standard screening ultrasound imaging" as a choice at initial set-up of the software, where a facility-wide selection is made that will apply to all data entry for all interpreting physicians. There also should be provision for a facility to change this selection facility-wide. This field indicates whether the facility performs standard screening ultrasound imaging as recommended in *Introduction to Follow-Up and Outcome Monitoring, BI-RADS®, 5th Edition* (recording 1 image for each breast quadrant and the retroareolar region, hence 5 images per breast), including additional images only as needed to overcome technical deficiency.

(9) Pathology data

Only one lesion should be reported for each exam. If an exam results in a biopsy or tissue diagnosis for more than one lesion, then the lesion of most concern should be reported, with values pertaining to that lesion reported for the pathology data elements. Degrees of concern are determined by "Malignancy type", with permitted values ranked from most to least concern as follows: "Invasive", "DCIS", "Other", "Not applicable / Not available". Determination of degrees of concern within malignancy types is at the discretion of the interpreting physician.

[1] https://www.acr.org/-/media/ACR/Files/Practice-Parameters/Screen-Diag-Mammo.pdf