

Image Submission Guidelines and Recommendations



ACCEPTABLE IMAGE FILES AND SIZES

Use the table below to determine acceptable file formats and pixel width/height for each type of image. Verify that your images meet these standards prior to importing into Nuxeo.

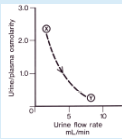
IMAGE TYPE	PREFERRED FILE FORMATS	PIXELS	EXAMPLES
Photomicrographs, X-rays, CT Scans, MRIs, Photographs	.tif .jpg .png .psd .gif .dicom	≥ 900 px wide or high	
Line Drawings, Diagrams, Illustrations, ECGs	.eps* .ai* .tif .jpg .psd .pdf	≥ 900 px wide or high *resolution-free images	

IMAGE RESOLUTION FOR PRINTING

Use these examples to determine the amount of pixels (px) your images require to be acceptable for print. Do not add pixels to make an image larger. This may degrade the quality.

PRINT SIZE (INCHES)	TARGET (PIXELS)
4" w x 3" h	1,200 px w x 900 px h
3" w x 5" h	900 px w x 1,500 px h
8.5" w x 11" h	2,550 px w x 3,300 px h

IMAGES TO AVOID

Provide the original image source whenever possible. Avoid the following:

- Media found via internet searches
- Media embedded in Microsoft Word documents
- Microsoft PowerPoint slides
- Photographs of a computer screen (taken with a camera)
- Patient photos with clear personal identifiers and without Patient Consent/HIPAA form
- Media with AI-suggested values, labels, identifiers, measurements, or diagnoses that have not been confirmed by a professional

DO NOT CONVERT OR RESIZE IMAGES

If you do not have or cannot produce images in these formats/resolutions, do not convert or resize your files. Submit as is, and our team will evaluate. For example:

- If you have access to a .gif file, do not convert it to a .jpg file.
- If you only have Microsoft files (.doc, .xls, .ppt, etc.), do not convert to image files (.jpg, .png, etc.).
- If you have an image that does not meet the recommended resolution/size targets, do not attempt to resize by changing the number of pixels or dragging the picture boundaries to appear bigger.

IMAGE SOURCES

Digital Radiology Systems (PACS)

If you do have direct access to the PACS image files:

Obtain the highest quality image possible—see above for targets and formats.

If you do not have direct access to the PACS image files:

- Most PACS workstations allow you to save images as files to your hard drive using a built-in menu option export command in the clinical workstation software. The specifics vary from system to system, so you may need to refer to your PACS workstation manual for detailed instructions. Some systems may have a separate export program, or there may be a designated staff member who retrieves and formats such images. **Check with your radiology department for the appropriate method at your institution.**
- **If your workstation does not give you an option to save images as local files,** you may consider (though recommended only as a last resort) using third-party screen-capture software such as 20/20, HyperSnap, or SnagIt to capture images exactly as displayed in the PACS workstation (see “Screen Captures” instructions below for further information).

Screen Captures

In certain circumstances, the only way to retrieve an image may be to capture it directly from the computer screen. Keep in mind that this technique has drawbacks, the most important being the relatively low resolution of the screen itself. Screen captures should be used only as a last resort—the original image file is always a better choice if it is available. **Actual photographs of the screen, taken with a camera, are NOT acceptable.**

Hard-copy Scans

It may be necessary to scan a hard copy of an image if a high-resolution electronic version does not exist. It is best to scan images at 300 dots per inch (dpi) resolution or higher. Line art should be scanned at 1200 dpi if possible.

Phones/ Digital Cameras

Use the highest quality settings possible when taking digital photos from your mobile device camera.

Generative AI

Due to unresolved legal ambiguities surrounding copyright, potential HIPAA protections for models based on real individuals, and other ethical considerations, **we currently do not accept AI-generated images.**

MEDIA SUBMISSION

NBME Media Library (Nuxeo)

- The NBME may already have the image you need in our online media library. If you have access to the Nuxeo Media Repository, you may search for existing images before submitting others that are very similar or common. Do not take screen shots of images already in Nuxeo and submit them as new images.

Copyrighted Material

- Remember to adhere to copyright guidelines when obtaining images through sources other than your own patients.

Patient Identifiers

- Patient identifiers are only acceptable if accompanied by a signed consent form, regardless of the origin and format of the image. Remove or obscure any patient names, medical record numbers, Social Security numbers, birth dates, diagnoses, or any other information that could be used to identify a specific person. Alternatively, if an image contains these identifiers, NBME staff can remove or obscure them as long as they are accompanied by a signed consent form.

Composites

- If you are submitting any multi-image composites, submit all individual images used to create the composite.

SUBMISSION METHOD – NBME MEDIA LIBRARY (NUXEO)

All media files should be imported into your NBME Media Library (Nuxeo) on the NBME Connect Portal:

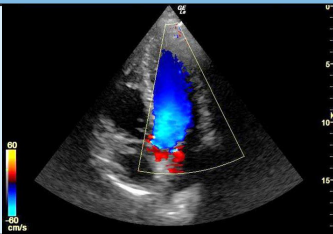
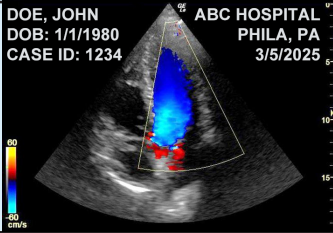
connect.nbme.org



Media Library
(Nuxeo)

PATIENT CONSENT/HIPAA FORMS

A Patient Consent form is required if a medical image is identifiable or reasonably linkable to a person through visible features, metadata, or accompanying information, or if it reveals sensitive health information. If the image is fully de-identified, consent is generally not needed. State laws typically don't apply to images of deceased individuals.

		Consent status: SIGNED	Consent status: NOT SIGNED
Non-patient photos without patient info			
Non-patient photos with patient info		 NBME can mask patient info	 Removal of patient info recommended
Patient photos with no clear personal identifiers			 OK to submit but consent preferred.
Patient photos with clear personal identifiers	 	 NBME can mask patient info	 NOT ACCEPTABLE

GLOSSARY

IMAGE: This refers to a graphic or still photograph in either physical (paper, film, etc.) or electronic form.

FILE FORMAT: This refers to the type of image file. Some examples of popular formats include .jpg, .png and .tif. Each type has strengths and weaknesses depending on the specific context.

COMPRESSION: This refers to techniques used to shrink the size of image files. Most image formats have options for compression. Compression can be lossless or lossy. The former preserves all information present in the original. The latter does not; .jpg is the most popular format that depends on lossy compression. The amount of compression used in a .jpg file is inversely related to .jpg quality.

RESOLUTION: This refers to pixels or dots per inch. Original photographs or drawings have unlimited resolution for the purpose of this discussion. Laser printers typically produce 300 to 600 dots per inch (dpi). Computer screens are typically 72 to 100 pixels per inch (ppi). Note that for a given one-inch square, computer screens have LOWER resolution than most printed documents.

VECTOR GRAPHIC: This refers to a special type of file that stores an image as a collection of mathematical vectors rather than a collection of colored points. For this reason, line art and drawings are typically saved as vector graphics. They tend to be scalable and work well for printing on paper. The most popular file format for vector images is .eps. Other popular vector formats include Adobe Illustrator (.ai) and Windows Metafile (.wmf).

NUXEO: Nuxeo is the NBME's online media library to search existing/add new media.