

SCENARIO: While images and savescreens appear in color on viewing stations, those same images and savescreens appear in black and white on PACS.

EXPLANATION: Be advised that scenario can happen with any viewing station and any PACS.

For raw images (not savescreens)....

Nuclear Medicine images are comprised of numbers stored within a pixel, and then multiple pixels form an image. For example, a 64 x 64 matrix image has 4096 pixels. Each of those 4096 pixels stores the number of gamma events (counts) that occurred at a specific x/y coordinate.

Whether those counts are displayed in color or black & white is purely a function of the viewing software. 25 counts in a given pixel could be displayed as red, green, blue, or a shade of grey. The viewing software determines the display properties. In most applications, a user can select one of a large variety of lookup tables (aka, color tables) to display an image. Those tables determine how the image is displayed.

For savescreens, not raw images...

In DICOM parlance, savescreens are called "secondary capture" images. They can be created and then saved in either black & white (aka, 8 bit) or color (aka, 24 bit). However, just because they are created in color does not mean the viewing station will display them in color. It is rare for a PACS to display a black and white savescreen in color, but it is not uncommon for a PACS to display a color savescreen in grey scale.

DICOM tag [0028,0004] determines whether a secondary capture was created in black and white or in color. For example, in a Monthly Intrinsic Flood Calibration Savescreen, the image is in grey scale, but the border of the page is blue. Therefore, DICOM tag [0028,0004] contains RGB (red, green, blue). That tells the viewing software this is a color save screen. In DICOM terminology, this is called a 24 bit savescreen (8 bits for red, 8 bits for green, and 8 bits for blue).

See the following page for the DICOM tags listed via Dicom Dumper for the a Monthly Intrinsic Flood Calibration Savescreen.

In summary, whether raw images appear in color or black & white is purely a function of the viewing station. For the savescreens, check DICOM tag [0028,0004].

