The IHE Nuclear Medicine Image Profile FAQ

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Overview

What is the IHE?

IHE stands for "Integrating the Healthcare Enterprise," and is a joint effort of the RSNA, ACC, and HIMSS dedicated to making digital communication in radiology and medicine work smoothly.

What is the Nuclear Medicine Profile?

The Nuclear Medicine profile is a set of specifications as to how NM systems and PACS systems should interact when dealing with nuclear medicine data. The primary focus deals with storage and display of such data on PACS systems, with lesser emphasis on exam scheduling, creation, processing and transmission of nuclear medicine data.

The profile was created by members of the SNM DICOM Working group, representatives from nuclear medicine vendors, and the IHE, with input from ASNC and ACC.

What PACS goals are included?

One goal is to make sure that Nuclear Medicine data flows seamlessly between NM and PACS workstations.

For general image viewing, the goal is to be sure nuclear medicine images are properly displayed on PACS for referring physicians and radiologists.

For cardiac image viewing, the goal is to allow processed nuclear medicine data to be sent to a PACS and displayed in a manner as to permit accurate interpretation of cardiac nuclear medicine images on a general PACS display.

Are PACS vendors required to comply with the profile?

That depends on you. Participation by vendors is voluntary. But you should require support for the profile in your RFP (See "How might users take advantage…"). Vendors that participate (and demonstrate that they can do everything in the profile at the IHE Connect-a-thon) can advertise that they are in compliance with the Nuclear Medicine Profile.

How will the profile benefit the PACS vendors?

It clarifies use of existing standards, such as DICOM, in a way as to promote interoperability.

It provides one set of clear requirements to meet, approved by the Society of Nuclear Medicine, rather than having many separate (and possibly conflicting) demands from individual sites.

It provides the opportunity of cross-testing with other vendors at a special 5-day networking session (the Connect-a-thon).

How might users take advantage of the profile?

When giving an RFP to a vendor, one can request that the system "should meet the specifications of the IHE Nuclear Medicine profile".   In 10 words, you are specifying the content of a 50-page document that domain experts in both the user community and industry have spent months developing, which has a high probability of meeting your needs, and which has already been tested in a multi-vendor environment.

IHE NM Image Profile – Key areas

What image formats are specified?

Support for all of the DICOM nuclear medicine image types is required.   In addition, formats for grayscale and color (RGB) screen snapshots are specified, as well as for cine processed screens

What display controls are specified?

Display systems are required to have independent control of <u>upper and lower levels</u> for nuclear medicine data, rather than the window center and width controls used in general radiology. These upper/lower level controls would apply to all grayscale nuclear medicine images, and likely also to grayscale NM screen snapshots. It will also be possible to apply local color tables to these same images during viewing. (However, color (RGB) snapshots, due to their nature, cannot be adjusted.)

What options are available in the profile?

The General NM Image Option focuses on non-cardiac nuclear medicine imaging.

The Cardiac NM Option focuses on myocardial perfusion imaging and gated blood pool imaging.

The Result Screen Export Option allows for export of the gated cardiac screens, as well as for export of non-moving result screens.

The MPR Option deals with display of SPECT images in multiple planes.

What display formats are specified?

Grid Display – Intended for <u>one dataset</u>, this fills the screen with images, with the ability to scroll through the images if they do not fit on a single screen.

Fit Display – Intended for use after selecting <u>more than one dataset</u>, this puts the images up on the screen as they best fit, given the display real estate available.

Wholebody Display – Intended for use after selecting one or more wholebody images, this tries to show them at original resolution if possible, rather then shrinking them to pack them on a screen.

Cine Display – Able to display one or more cines at the same time, such as a 3-view RVG or the raw stress and rest projections from a cardiac SPECT study.

ACC NM Cardiac Display– Display of two (or more) SPECT myocardial perfusion images sets in the standard format approved by the American College of Cardiology. (Available in the Cardiac NM Option.)

MPR Display – Display of a SPECT image in transverse, sagittal, and coronal planes. (Available in the MPR Option.)

What special cardiology issues are dealt with?

Under the Cardiac Option, image display systems are required to be able receive short axis cardiac SPECT data from a stress/rest myocardial perfusion study, reformat the data to create vertical long and horizontal long axis planes, and display the images in the standard ACC NM Cardiac Display format. Appropriate controls for aligning stress and rest data and adjusting relative intensities are also required.

To enhance transfer of data between nuclear medicine systems, use of new DICOM cardiac codes is required. These more completely designate the image orientation (eg, short axis images, going from apex to base) and the patient imaging state (stress, rest, reinjection redistribution, or delayed redistribution).

To enhance sending of processed screens to PACS, the format for both static and dynamic processed screens is specified, both for color and grayscale images.

For grayscale screen captures, it is suggested that the upper/lower levels be adjustable, and required that local color tables be able to be applied. However, note that controls will affect the screen as a whole, and adjusting colors will unavoidably also affect any text or graphics in the screen snapshot.

The ability to view the raw projection data from (up to) a 3-part stress-rest-redistribution is required, with all 3 cines shown at the same time and moving synchronously.

What workflow issues are included?

Issues regarding scheduling of nuclear medicine exams and logging of their completion are also addressed, and are described in an appendix, which deals with the interaction of the NM profile and the Scheduled Workflow (SWF) profile.

Is PET included?

No. However, there is a separate Image Fusion Profile that deals with display of PET/CT data.

What happens next?

The IHE published the revised NM profile in May 2006. NM and PACS vendors will then implement the profile for official testing in January, 2007. The improvements will then hopefully work their way into released products.

What should I do?

It is very important to talk to vendors, ask them if they comply with the IHE NM Profile, and encourage them to support it if they do not currently do so. As more customers ask for the profile, it will become a higher priority for vendors to include it in their products.

For more information

See www.ihe.net   and   www.snm.org/ihe