ARTnet Camera Validation Program FAQ

What is the ARTnet Camera Validation Program?

This program utilises the ARTnet phantom to document PET or SPECT camera performance. The ARTnet phantom assessment can be used for either:

(i) a 'general' assessment of an imaging device (SPECT or PET camera) to document basic performance under standard conditions, not attached to any particular trial, or
(ii) a 'specific' assessment designed to determine the suitability of imaging equipment for an individual clinical trial.

The general assessment might be performed to validate a camera (or several cameras) at a site as a potential partner in future unspecified clinical imaging trials, whereas the specific assessment would focus on the defined needs of a particular clinical imaging trial in question.

Why is the camera calibration process useful?

The main purpose of the ARTnet camera validation program is to facilitate standardisation of imaging data collected across sites in a multi-centre clinical trial setting. By ensuring calibration of the cameras, this will allow the comparison of semi-quantitative data across sites.

What is the process if I would like my camera/s assessed?

1. Complete the ARTnet Camera Validation Request Form and email it to projectmanager@artnet.org.au
2. You will then be sent the ARTnet Pre-Validation Checklist which you will need to complete and email to projectmanager@artnet.org.au
3. The ARTnet Project Manager will then contact you to organise delivery of the ARTnet phantom. Please note that the scans are expected to be performed within 2 weeks of phantom delivery.
4. The ARTnet phantom will be delivered by courier to your site at the agreed date.
5. Instructions regarding how to prepare the phantom, how to perform imaging and how to upload the results will be provided.
6. Once your imaging is complete, upload your results to the link provided and notify the ARTnet Project Manager.
7. The ARTnet Project Manager will advise you of the analysis results (either pass of validation specifications or recommendations to repeat the scan).
8. The Project Manager will organise return of the ARTnet phantom & courier address labels.

How is the analysis of the ARTnet Phantom performed?

The data from the phantom study will be analysed, according to ARTnet's camera validation protocol. ARTnet will then issue the validation certificate to the site. ARTnet will hold the data for a minimum of 2 years.

What is the cost?

The fee that ARTnet charges is to cover direct ARTnet costs including supply of the ARTnet phantom, transportation, analysis of the data, phantom parts, maintenance and consumables, as well as administration costs and any additional assistance provided. The cost of camera validation may vary depending on the specific requirements of a site or clinical trial. For further information, please email the ARTnet Project Manager projectmanager@artnet.org.au.

Payment is required within 4 weeks according to the invoice payment terms. You will receive your validation certification within 4-6 weeks of data upload and after your invoice has been approved for payment.

What is the ARTnet Phantom?

The ARTnet phantom uses a NEMA-NU2 (2007) IEC body phantom and is suitable for PET or SPECT camera validations. There are instructions included with the phantom that outline how to prepare the phantom.

Can I use my own phantom?

Yes, but only if it complies with the following;

1. It is a Data Spectrum IEC body phantom
2. The exact volume of the background compartment is known
3. The cumulative volume of the spheres is 47.8 mL.
4. The phantom is clean and free of residual radioactive contamination

If you plan to use your own phantom, record this on your ARTnet Camera Validation Request Form. Please note, the exact volume of the phantom will need to be accurately measured prior to imaging.

If certification is sought for long-lived radionuclides using the ARTnet insert protocol, ARTnet recommends using the ARTnet phantom only to ensure the correct fit.

Is SPECT validation different to PET validation?

The process is the same as long as the SPECT camera being validated has quantitative reconstruction capabilities. Quantitative reconstructions can be generated with either vendor supplied software or in-house vendor neutral software.

You will be asked to confirm this and provide results from a recent SUV check on a uniform phantom for the isotopes you wish to have validated. It is recommended to perform a basic SUV check on a simple object such as a uniform phantom before attempting the IEC phantom to flag any issues that may be addressed prior to impacting certification. Without quantitative reconstruction capabilities, ARTnet will not be able to complete your SPECT camera validation. If you wish to discuss this further, please contact the ARTnet Project Manager, projectmanager@artnet.org.au**.**

What is the purpose of the Pre-Validation Checklist?

To ensure that the necessary preliminary checks have been performed and that the associated apparatus are configured correctly to avoid unnecessary failures and requirement for repeat validation scans. Also, to reduce the cost and lead time on getting your camera validated.

What is the mean SUV and why does this need to be provided?

The SUV must be measured from a recent scan performed on a phantom filled with a uniform concentration of activity of the isotope of interest (e.g. F18). This is to minimise the chance of delays or repeat scans being required as it allows ARTnet to confirm the scanner is behaving as expected prior to beginning the validation process. The scanner SUV is typically part of a site's QA program overseen by a physicist. It is not part of the daily QC performed on the scanner. If you are unsure if your site has recently performed a SUV check please contact ARTnet for guidance.

Is there a recommended activity to scan with?

The aim of the validation is to assess image quality at typical activity concentrations used in clinical practice. The following table shows reasonable activity ranges for F18 and Ga68 to be used in the phantom at the time of scanning. Unless specified in a specific trial protocol.

Isotope	Activity Range (MBq)
F18	50 – 150
Ga68	50 – 150

Please contact ARTnet if you wish to include other isotopes which are not listed above.

Can ARTnet assist with isotope supply?

ARTnet does not supply the radioisotope for the phantom study.

Do I need to add contrast to the phantom background?

No. Adding contrast is not necessary.

A trial has asked for a specific protocol. Is it ok to use this?

All sites need to acquire a standard 2 bed position with the phantom centred in the field-of-view. If your trial specifically requires a nonstandard acquisition e.g. brain study, a further acquisition must be acquired according to the trial specific protocol.

What information do I receive after my camera has been assessed?

You will receive ARTnet certification for the camera that was assessed. This certification confirms that the camera meets calibration standards. If there are specific requirements for a clinical trial, this may also be noted in the certification. You will receive the certification within 4 weeks of upload of your data.

What do I do if my camera does not attain the accreditation requirement?

You will be contacted and given information on why the camera did not reach the accreditation standard. This may require repeating the ARTnet phantom study which may incur an additional fee.

How long is the camera calibration valid for?

As a guide, ARTnet recommends re-certification every 2 years. If however there has been a major hardware or software upgrade to your camera that may influence semi-quantitative values, then the camera calibration may need to be repeated sooner than this. There may also be trial-specific requirements stipulated in the protocol of a clinical trial that may supersede these recommendations.

Do I need to repeat the process for each different clinical trial?

No – there should be no requirement for repeating the ARTnet phantom for each trial providing the camera and the isotope that was used in your original ARTnet calibration have not changed, and there has been no major change to the camera hardware or software since the ARTnet phantom study was performed. If you have a specific trial requirement and are uncertain if your current certification is valid, please contact us for further advice.

What happens if I do not complete the camera validation within 2 weeks of receiving the ARTnet Phantom?

An extended phantom use fee will be charged if your camera validations scans are not completed, and data uploaded within 2 weeks of receiving the ARTnet phantom.