Tumor Imaging Metrics Core and Precision Imaging Metrics

A shared resource of the Dana-Farber/Harvard Cancer Center

The Tumor Imaging Metrics Core (TIMC), co-Directed by Annick D. Van den Abbeele, MD (DFCI) and Gordon J. Harris, PhD (MGH), is a shared resource that was founded in 2004 to provide standardized, longitudinal tumor metrics of radiological scans (CT, MR and PET) for patients enrolled in oncologic clinical trials across the five Harvard teaching hospitals of the Dana-Farber/Harvard Cancer Center (DF/HCC). The independent web-based tumor response measurements provided by the Core facilitate the evaluation of new therapies tested and/or developed at DF/HCC and other Cancer Centers.

There are currently over two dozen clinical trials imaging criteria in common use, and most trials have further complications of trial-specific criteria modifications and even multiple imaging criteria within a trial. As a result, many cancer centers struggle to get imaging assessments performed correctly according to the trial specific imaging criteria in time for the patient’s office visit where results are needed to determine subject enrollment and continuance on trial. Furthermore, stringent audit requirements are taxing on cancer center staff, and without a comprehensive informatics platform to manage the imaging data, these can be time consuming and poor data quality and tracking can lead to protocol violations.

To address these issues and more, we developed a web-viewer based system to manage the entire clinical trials imaging workflow including ordering, communication, image assessments, criteria conformance, results reporting, electronic signatures, audit trails, and chargeback billing. These full range of tasks are all managed through an integrated web informatics platform, the Precision Imaging Metrics system (PIMS), developed by TIMC. This software platform is currently in use at eight NCI-designated Cancer Centers around the country, including several NCCN sites, with several additional NCCN and other Cancer Centers considering implementing the system.

PIMS guides radiological review so that clinical trials imaging assessment results are provided with high-quality data compliant with the trial-specific protocol criteria. The workflow management tools ensure that results are available on-line in time for review at the point of care often on the same day after completion of scanning.

For most of our larger collaborating Cancer Centers, imaging assessments are performed by the participating site radiology team using the PIMS imaging assessment and workflow management system. Alternatively, smaller cancer centers often prefer to send scans electronically to TIMC to perform imaging assessments and cancer center staff at the sites can place orders and review results, including annotated images, tables, and graphs, in the Precision Imaging Metrics web portal. TIMC currently manages imaging for over 1,000 active clinical trials and performs over 17,000 image assessments per year. The figure below shows the PIMS web-based informatics and workflow management system on the left and the integrated oncology clinical trials imaging assessment web-viewer on the right.

For more information on our clinical trials services or to contact the Tumor Imaging Metrics Core, visit [our website here](https://www.advancedimaginglabs.org/clinical-trials-services/).



Figure: The Precision Imaging Metrics system (PIMS) for web-based clinical trials imaging assessment and workflow management informatics. On the left is the PIMS informatics portal, enabling trial registration, ordering, radiology worklists, results reporting with annotated images, tables, and graphs, billing, and training materials. On the right is the clinical trial image assessment web-viewer, which is integrated with the PIMS portal and includes conformance checks for many imaging criteria to assure that measurements are consistent with trial-specific imaging protocols.