

<b>Name of Policy:</b> <u>Clinical Patient Treatment Standard Operating Procedures for IGRT</u> <b>Policy Number:</b> 3364-134-101 <b>Department:</b> Radiation Oncology <b>Approving Officer:</b> Chief Executive Officer - UTMC Clinical Service Chief, Radiation Oncology <b>Responsible Agent:</b> Technical Manager, Radiation Oncology <b>Scope:</b> Radiation Oncology	 <b>Effective Date:</b> 3/1/2021 Initial Effective Date: 8/1/2013
<input type="checkbox"/> New policy proposal <input type="checkbox"/> Minor/technical revision of existing policy <input checked="" type="checkbox"/> Major revision of existing policy <input type="checkbox"/> Reaffirmation of existing policy	

**(A) Policy Statement**

All patients requiring IGRT must have an approved physician order prior to beginning a course of treatment that specifies use of MV portal images, CBCT, and/or KV images. Physicians, physicists and therapists will all be directly involved in accurate patient localization through IGRT process.

**(B) Purpose of Policy**

To ensure localization accuracy in the defined treatment area, to minimize error in dose delivery, and to provide radiographic documentation of the area imaged prior to treatment.

**(C) Procedure**

1. During the morning QA performed by the therapist prior to patient treatment each day, MV image quality is checked using a Las Vegas phantom. If phantom image quality doesn't meet the minimum requirement for constancy check, QMP is informed.
2. During the morning QA performed by the therapist prior to patient treatment each day, KV orthogonal pair and CBCT image localization is checked using a cube shift phantom. If shift measurements exceed the tolerance for constancy check, QMP is informed.
3. If IGRT is not available on any of the LINACS as a result of QA failure, physician is informed to decide if treatment plan is delivered using available imaging systems, without imaging, or delay treatment until the issue is resolved.
4. Routine monthly and annual QA will be performed by staff under the supervision of a QMP on all available IGRT equipment at the recommendations of AAPM's TG-142.
5. A Physician will perform visual inspection for IGRT localization quality on all SRS/SBRT patient images on treatment console prior to each treatment delivery. If/when shifts are made, a second set of CBCT images are acquired and upon a physician approval treatment is delivered.
6. All other patients with IGRT order in their prescription will get a physician review of images prior to their first treatment and for consecutive treatments, IGRT images are reviewed by therapists prior to dose delivery. A physician will be called to the treatment machine at the discretion of therapist if they see any issue with imaging or localization.
7. A second physician will review all IGRT images prior to the next treatment as a peer review process. If any change in localization is deemed necessary it will be documented and therapists alerted before the next treatment.
8. IGRT will be ordered and used for all photon treatments. IGRT will be used for electron treatments only when requested by the physician.
9. Type of imaging and frequency must be in the prescription.
  - a) All SRS, SBRT and high dose (>5 Gy/fraction) patients will have a CBCT acquired by radiation therapist and checked by a physician prior to treatment. A second set of CBCT images may be obtained to verify the shift from previous scans. If possible, medical physicist should remain at the

