Name of Policy: HDR Brachytherapy Delivery **Department:** Radiation Oncology **Policy Number**: 3364-134-100 **Approving Officer**: Chief Executive Officer – UTMC Chairman – Radiation Oncology - UTMC **Responsible Agent**: Technical Manager, Radiation Oncology **Scope**: Radiation Oncology	THE UNIVERSITY OF TOLEDO MEDICAL CENTER **Effective Date:** 3/2019 **Initial Effective Date**: 10/1/2012

	New policy proposal		Minor/technical revision of existing policy
	Major revision of existing policy	X	Reaffirmation of existing policy

(A) Policy statement

The Radiation Oncology department will assure safe delivery of HDR Treatments.

(B) Purpose of policy

To ensure accurate treatment planning and safe delivery of HDR treatments to all patients.

(C) Procedure

QA forms specially designed for each of these topics will be filled out prior to radiation being administered:

1. Written prescription and daily treatment record including:
    - patients name and DOB,
    - clearly defined written prescription, including fraction size, number of fractions, total absorbed dose, and dose specification criteria, e.g. dose to prescription points such as point A or volume such as a given PTV, as well as the MD signature and date. For a multi-fractionated course such as Fletcher-Suit applications the dose per treatment and total dose may be updated before each treatment depending on the placement of instruments and doses to target and critical structures.
    - diagram of location of applicator system to be illustrated
    - An identification of instruments/applicators used. For complicated (multi-needle interstitial implants) photos and needle numeric identification diagrams should be provided.
    - Daily treatment record with the date of delivery, the absorbed dose, the cumulative dose, the source strength, total dwell time,
    - Initials from the physicist, physician and therapist
2. Treatment day remote afterloader morning QA

    Correct function of:
    - Audible and visual communications
    - Remote after loader being simulated during a treatment
    - Door interlocks and audible/visual alarm and error indicators

    Accuracy of:

- Decayed source strength programmed into treatment unit and planning system
- Time using tertiary standards or a sports timer
- Source positioning

Availability, condition and function of :

- Emergency kit, and emergency safe
- Emergency instructions and procedures (posted outside at the console)
- Treatment users operators manual
- Handheld survey meter and flashlight

3. Applicator preparation
    - All applicator components and accessory available
    - Plastic components in good condition
    - Applicators correct length and diameter
    - Applicator properly sterilized
4. Applicator insertion:
    - Patient identification
    - Correct applicator confirmed by the nurse or assistant and physician.
5. Localization/Simulation :
    - Use dummy markers routinely. These may be excluded at discretion of physician and planning physicist if deemed unnecessary.
    - CT Scan patient as directed by physician
    - Patient dose points properly identified for target and critical structures
6. Treatment plan:
    - Software version number , source calibration date, source strength
    - Today's date, and source strength against decayed strength
    - Correct system data file
    - Default parameters used for dose calculations
    - Physician prescription form completed, signed and dated
    - HDR physics form filled out, signed and dated
    - Patient chart
    - Isodose plot of current plan, signed by physician
    - Generally plans will be 3-D conformal including dose volume histograms for target and critical structures. At the discretion of the physician the plan may be only a brachytherapy 2D planar isodose plan
    - Printout of current plan
    - Correct number of catheters
    - Step increment for source travel
    - Source geometry reconstruction
    - Starting position and list of dwell positions
    - Correct indexing length for each catheter
    - Catheter length used in treatment plan agreeing with measured
    - Radiograph orientation, magnifications and film to source distance for 2D planar plans
    - Applicator points coordinates
    - Correct dose optimization point on printout and plot
    - Reasonable print view for the position of the patients points of interest
    - Check on the print out that the doses to the parent points are reasonable
    - Reasonable agreements with previous plan
    - POLICY # 3364-134-98 details 2nd calculations by physicists prior to treatment

7. Pre-treatment check between certified medical physicist and board certified physician (identified as provider on isotope license): (policy # 3364-134-87 details authorizations of physicians to use HDR)
    - MD verify applicator has not shifted/moved since insertion.
    - Same step size as plan printout
    - Total number of catheters agreeing with that in the plan printout
    - Total treatment time agreeing with that in the plan printout
    - Length of catheter agrees with that in plan printout
    - Physics staff and therapist verify that connecting catheters are placed in correct channel numbers and correspond with matching number on applicators
    - Dwell positions agree with the plan printout
    - Correct length for each catheter is checked by the physics staff and a therapist
    - TIME out including patients name and DOB
8. Post treatment QA
    - Verify each treatment time on the printout
    - Physics staff verifies radiation level at console and in treatment room with Geiger counter
    - Detach treatment catheter from unit, cleaning and storing it according to manufacturer's instructions
    - Turn off control panel and lock keys in designated area
    - File daily records
9. Staff will attend annual safety training on HDR procedures and emergencies.
    A. "When an employee is absent during an annual radiation training, he/she will receive the printed handouts and sign that they have reviewed the materials, questions are reviewed and answered if any exist.".
    B. "As an item of compliance during their annual performance evaluations or competencies, all radiation workers are required to show that they have completed the annual radiation training".

Approved by: /s/_____03/06/2019_ Changhu Chen, MD Date Professor & Chairman, Radiation Oncology _/s/_____03/11/2019 Daniel Barbee, RN, BSN, MBA Date Chief Executive Officer - UTMC *Review/Revision Completed by:* *Michelle Giovanoli*	Review/Revision Date: 12/2012 2/2016 3/2019 Next review date: 3/2022
Policies Superseded by This Policy: 38-91	