STANDARD OPERATING PROCEDURES FOR MEDICAL PHYSICS SECTION

Medical Physicists are instructed to perform the following in order to achieve safety and uniformity in the work.

- All Medical Physicists should take care both dosimetry and medical equipment.
- All treatment machines should be checked by Medical physicist prior treatment delivery.
- All findings concerning treatment should be recorded at the files of Quality Control of each machine daily.
- The dose rate (output) for Co-60 external beam machines should be changed on 15^{th} of each month and agreement of 2% between measured and calculated output will be acceptable.
- All accidents involving unwanted exposure to the patient, medical personnel or any member of public should be reported to medical physicist who is the radiation protection officer of the institute who may later report to TANZANIA ATOMIC ENERGY COMMISSION and the management for appropriate measure.
- All incidents should recorded and discussed to the Quality Assurance Committee.
- Treatment planning at the Brachtherapy section should be done by the qualified medical Physicist/verified by medical physicist prior treatment delivery.
- In vivo dosimetry should be conducted to each patient before completing the planned treatment but the emphasize should be within the first three fractions of the treatment.
- Medical Physicist should ensure the safety and proper functioning of radiotherapy equipment.
- Medical Physicist should supervise on the implementation of radiation protection principles such as Low as Reasonably Achievable (ALARA).
- Medical physicist should write the specification documents for procurement of radiotherapy equipment.
- Medical physicist should wear TLD at all time in ORCI premises.
- Medical Physicist should ensure proper posting and monitoring of warning signs.
- Medical physicist should keep records and maintaining an accurate inventory of radioactive materials.
- The treatment time and all parameters should be verified within first three fractions.

- Maintaining and monitoring license conditions filling amendments license renewals and working closely with TAEC to ensure uninterrupted treatment procedures.
- Medical Physicist should conduct internal audit each year and external audit (IAEA/WHO) after every two years
- The Co-60 source should be changed after every five years. The physicist should be responsible to inform management.
- Air Kerma Strength Should be determined after every three months and compared to the treatment planning.
- In air method or well type chamber can be used to determine the Air Aerma Strength.
- In case of source stuck or failure the patient should be removed immediately and the source should be turned in shielded position by manual procedures. T-bar should be used for EBRT and manual handle drawer for BRACHYTHERAPY Units to retract the source.
- The patient weight is suspected to be higher than 100kg, medical physicist has to be informed for appropriate machine selections.
- Do not use solvents containing acetone , methylethyl, ketone or other related chemical may damage the equipment cover.
- Do not bypass the interlocks provided without reading the measures or thinking.
- IF any beam modifiers device was used it has to be taken into account in the treatment time calculation.
- Do not scratch covers, table and make sure that the liquid do not come in contact with electrical wiring or other components.
- Radiation survey of the all areas should be done yearly and the report with suggestions should be sent to the management of ORCI
- The beam data should be checked every year and has to be compared with the planning system
- Medical Physicists are responsible for conducting training which includes treatment planning, dosimetry, quality assurance, radiation protection and machines.
- Medical Physicists are responsible to ensure patients, staffs and member of public are safe from ionizing radiation
- Absolute dosimetry of linear accelerators should be done weekly, while dose output, symmetry, MPC and profiles should be checked daily.
- Monthly check of the accelerators should be done by qualified Physicist

- All 3D and IMRT plan should be done by qualified physicists, patient scheduling and final physics check have to be done by the second qualified physicist
- Physicists should perform the daily and weekly checks of the CT simulator as well as C-arm are performed and well documented.
- Physicists are responsible for the care path creations and assign appropriate users of the Oncology Information system