

# QUALITY CONTROL OF DOSE CALIBRATOR TO IMPROVE THE IMAGE QUALITY IN NUCLEAR MEDICINE AT SINDH INSTITUTE OF UROLOGY & TRANSPLANTATION (SIUT)

Syed Muhammad Araiz, Dr Akhtar Ahmed, Dr Adib-ul-Hasan Rizvi  
Nuclear Medicine and Molecular Imaging Department, SIUT

## SINDH INSTITUTE OF UROLOGY AND TRANSPLANTATION [SIUT]

### OBJECTIVE

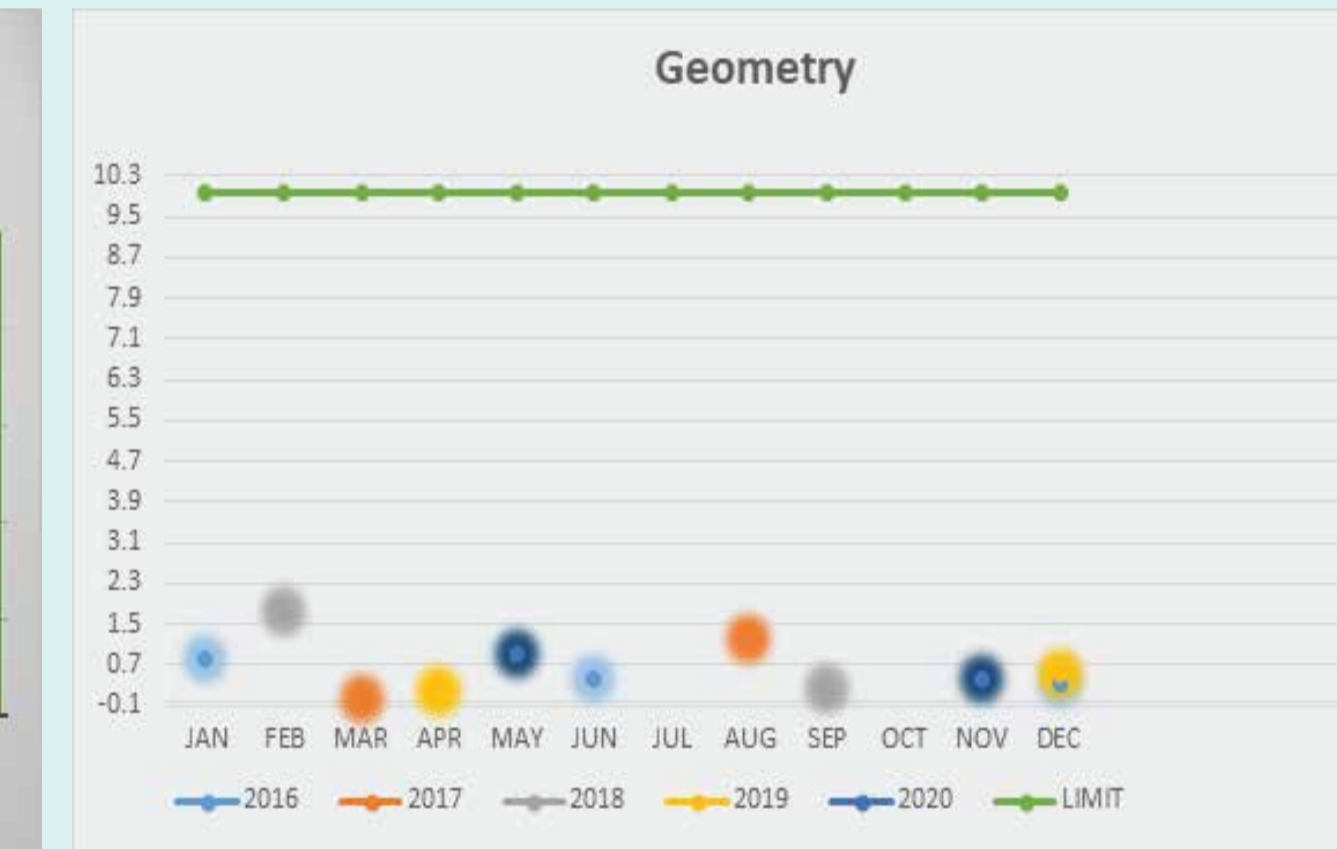
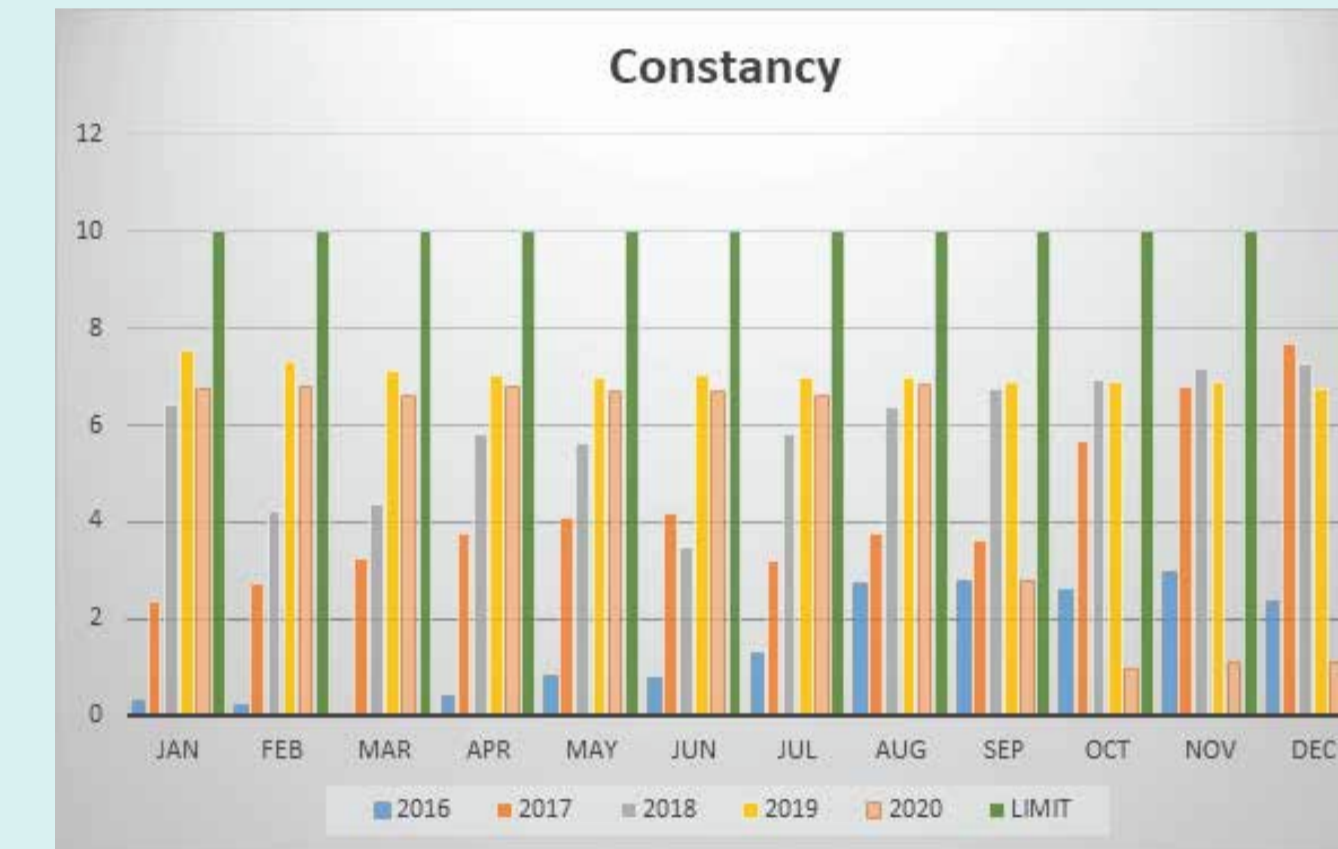
The objective of our study is to ensure the quality control of Dose calibrator in constancy, linearity and geometry and to improve the image quality and reduction in radiation dose to the patients. For these important quality targets, precise and accurate functioning of dose calibrator in nuclear medicine pharmacy is mandatory.

### MATERIAL AND METHODS

This study was performed at Department of Nuclear Medicine and Molecular Imaging, SIUT, Karachi from Jan, 2016 till Feb, 2020. The measurements were made using dose calibrator CRC-15 (CAPINTEC Inc, USA). The dose calibrator displays result after executing various steps in a sequence. We used sealed sources of Cobalt-57 and Cesium -137 and Tc-99m as unsealed sources as reference sources to check quality control of constancy, linearity and geometry. The quality control of dose calibrator having constancy on daily basis, linearity on quarterly and geometry on half of year as per vendor's specifications. Standard of  $\pm 10$  of measured activity with reference to actual activity was used for constancy, linearity and geometry. All the values were within prescribed limits.

### RESULT

The readings show the average value of Constancy (4.75%), of Linearity (0.65%) and of Geometry (0.61%) which is very less as compared to prescribed limit. The study reflects good manufacturing and quality control of dose calibrator provides an evidence of safe medical practices.



### CONCLUSION

This study of constancy, linearity and geometry of dose calibrator at Department of Nuclear Medicine and Molecular Imaging, SIUT, Karachi ensures precise and safe delivery of doses of radiopharmaceutical to patients having nuclear medicine procedures at our facility and also proves good medical practice at our center in accordance with PNRA and IAEA. This shows that our institute provides better routine imaging services with improved image quality, reduction in radiation dose to the patients.

### KEYWORDS

Dose calibrator, Constancy, geometry, linearity, quality control, Good Medical Practice.

