

Dose management program: long term results

G. Tosi*, M. Profili+, A. Spinillo+, L. Balzarini+
*Medical Physics Department – Humanitas Research Hospital – Rozzano Italy
+Radiology Department - Humanitas Research Hospital – Rozzano Italy

Aim

The goal of this study was to describe and analyze a long term project of dose management from the beginning to results obtained

Material and Method

In late 2014 our radiology department in agreement with the hospital's leadership decided to implement a dose management program with the help of a software (Dosewatch™) and a training program.

The number of radiological equipments initially monitored were 2 CT, 1 CT-PET, 1 MX and 2 RX.

It was created a dose team, made by a radiologist, a physicist (team leader) and a technician; the training program started at the beginning of 2015, regarded initially the 2 CT equipments, and was based on four topic elements: standardization of protocols used, justification on dose levels that exceeded a fixed dose threshold, optimization of acquisition protocols to decrease doses and communication of obtained results at the hospital community and to the public/patients.

To actuate this program we defined an action plan in which it was clearly evident what to do, who is responsible for, and a date dead line for each step. Nowadays the dose management program is applied to four CT and one PET/CT equipments.

Result

The first step was to map the number of protocols that we used and to train all technicians about the dose alert justification procedure. This initial part had permitted to eliminate a certain number of “double” protocols and to mapped the remnant ones. From data analysis we noted that on one CT equipment the 3 protocols that were over DRL in terms of DLP and CTDI were Head, Thorax and Abdomen: the dose team decided to change acquisition protocol by lowering current and changing collimation

On the second CT we identified the same protocols, but in this case the problems were only on DLP and not on CTDI; from the analysis of the scanograms we realized that problems were due to an excessive extension of irradiated region.

To reduce doses in term of DLP we trained technicians to scan only the body region request.

These protocols optimization led to a mean reduced doses of about 25% in terms both of DLP and CTDI.

Conclusion

Long term results in terms of dose reduction were very promising; moreover the most important things were the dose team creation and the implementation of a job methodology that could lead to optimise patients absorbed doses.