Lariboisière Hospital
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Experience sharing at Lariboisière Hospital (AP-HP, Paris' Hospitals):
The contribution of the Radiation Dose Monitor (RDM) solution in the context of a Nuclear Safety Authority (ASN) inspection

Antonella Jean-Pierre and Patricia Pierre, Radiation Safety Officers and technologists in medical physics at Lariboisière Hospital, give us their feedback as users of the Radiation Dose Monitor (RDM) solution following their last inspection from the Nuclear Safety Authority, which took place in March 2016. This sharing experience highlights the contribution of the DACS* RDM during these inspections.

This interview was conducted in the Medical Physics and Radiation Safety department led by Cécile Salvat.

**DACS: Dose Archiving and Communication System*

PART 1: Your experience

a) What is your experience as a user of the DACS RDM solution? How do you improve your professional practices?

A.JP/P.P

Within our team, we use the Radiation Dose Monitor (RDM) solution every three days. We check the studies by modality and target patients in alerts via a color code based on the Diagnostic Reference Levels (DRLs).

To improve our professional practices − and because interventional radiology is regarded as a risk-prone department − we first look at alerts studies and patient over-exposures. We set up notes and comments to check if certain protocols are relevant or not well assigned, always with the possibility of comparing our results with images from the PACS.

We target the alert levels with a desire to understand in detail the causes of such patient over-exposures. For example, an over-exposure can be linked to the patient's morphology (possibility to check directly the BMI), a misidentified or misconfigured protocol, etc. It's our responsibility to ask the right questions so that we understand and then act accordingly.

b) Which features of the DACS RDM do you believe are essential for monitoring patient dosimetry?

A.JP/P.P

The alert system based on the Diagnostic Reference Levels (DRLs), and the advanced statistical software tools, are essential for monitoring patient dose. The solution is also user-friendly and ergonomic. This fits perfectly with our working conditions and environment.
In addition of collecting all patient dose data, RDM can also collect important data that we did not have before (such as fluoroscopy data).

c) As part of your professional practices, what are the benefits of the RDM solution?

A.JP/P.P

First of all, we've gained time and a certain comfort in terms of the reliability of the results. In fact, RDM has changed the way we work. Previously, we had to record patient dose data manually every day – and we were taking only three indicators into account: the DAP, the time and the entrance surface dose. Now, with a simple click, RDM allows us to retrieve all DICOM data while saving time and avoiding transcription errors.

d) Could you compare the ASN (Nuclear Safety Authority) inspections before and after having the DACS RDM?

A.JP/P.P

The ASN inspections were always identical. However, this year we focused our speech and presented RDM as a quick, reliable and important solution in terms of medical physics – with regard to the alerts system, in particular. For each question – and an interview takes about an hour – we provided answers to the ASN's recommendations while showing them the interface.

Indeed, the ASN inspectors mainly check the establishment of the DRLs. Before deploying the solution, our answers were presented in paper format. Now, everything is simplified thanks to the digitization of data.

Finally, the ASN inspectors were very curious and attended our RDM demonstrations with great interest!

e) Could you give an example of a typical question during an ASN inspection that you could answer and justify easily through the DACS RDM?

A.JP/P.P

One of the typical questions asks whether our institution has set up professional practice analysis (PPA). RDM enables us to respond by showing them that, today, there's a software solution containing indicators of practical tools (advanced statistical tools, alert system, etc.) to assist us in building the PPA.

f) Compared to previous years, did the software make you feel more confident before the ASN inspection?

A.JP/P.P

Yes, we felt pretty confident in comparison to previous inspections. The ASN inspectors did not ask us to demonstrate the solution – but we spontaneously wanted to present RDM's added value in terms of optimization and radiation safety. For example, in interventional radiology the ASN's recommendations focus primarily on optimizing the dose, especially for patients at risk.

g) How would you describe the DACS RDM solution in a single word? And why?

A.JP/P.P

RDM stands for *reliability*. Everything is automated – so input errors are a thing of the past, and all DICOM data are retrieved and displayed while maintaining their integrity.

PART 2: THE ASN RECOMMENDATIONS

a) When was your last ASN inspection?

A.JP/P.P

Our last ASN inspection occurred in March 2016.

b) In its report, published on 25 May, the ASN noted "a lack of a radiation safety culture among healthcare professionals, particularly in the operating room." How does this common tool facilitate communication among all of the parties responsible for the dose cycle, thus improving the radiation safety culture?

A.JP/P.P

The report of our ASN inspection in March 2016 does not mention a lack of radiation safety culture in the operating rooms of Lariboisière Hospital. The operating room services are separate from the medical imaging services. We train our staff internally, knowing that we can adapt to the different practices in the operating rooms. Currently, our operating rooms are not connected to RDM. We are tracking dose as a written record while waiting for the budgets to connect the C-ARMS to RDM in the operating rooms.

c) ...and for the medical imaging services connected to RDM?

A.JP/P.P

RDM is easy to use. Taking the example of the green/orange/red color code: RDM enables healthcare professionals to detect at a glance whether or not we have exceeded the levels of alerts dose in a patient.

So yes, RDM facilitates communication among all those responsible for the dose cycle. We use RDM regularly, which allows us to be informed promptly if there are studies with over-exposed patients, so that we can quickly contact the doctors who performed the examination.

PART 3: FUTURE DIRECTIONS

a) How do you envision the dose cycle 5 years from now? The involvement of all the actors in radiation safety and patient care?

A.JP/P.P

First of all, in our experience, we have the surgeons in interventional imaging who take the time to contact us when they see alerts and over-exposures. Moreover, referring technologists in scanner and interventional are all trained in using RDM. We're gratified to find that everyone is taking an interest in patient care and radiation safety.

This awareness and involvement of the entire medical staff taking care of the patient gives us confidence in the future. The fact that all those responsible for the dose cycle are becoming more involved will no doubt improve patient dose monitoring and patient care during these next 5 years.

b) The DACS RDM is deployed on all AP-HP. What might it bring to patient care?

A.JP/P.P

Currently, a patient from AP-HP is assigned an identification number that can vary depending on the institution delivering the patient care. The goal is to have a unique identification number for every AP-HP patient. In the long term, it would be beneficial to implement this solution in all healthcare institutions on a national level. And one day, why not have a national or regional DACS containing all of the patient's dose history?

PART 4: Open Question

a) Do you have any other suggestions or comments?

A.JP/P.P

RDM is a DACS that keeps evolving and offering new features. It provides information for everyone involved in the dose cycle.