

Implementing a dose reduction strategy for patient populations

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There continues to be exponential advances in imaging technology that result in improved diagnosis, prognosis and patient well-being. While this is widely recognised, there has been a corresponding unavoidable increase in the use of ionising radiation – particularly in CT – and with it comes a rise in the cumulative radiation dose to patients

A holistic approach to patient dose management and reduction

At Sectra we believe that there are a number of key strategies that can be easily adopted to reduce patient dose. In support of this Sectra has developed a suite of products that work to ensure that departments are able to systematically lower dose in a measured and proven way. At the heart of this is the Sectra DoseTrack™

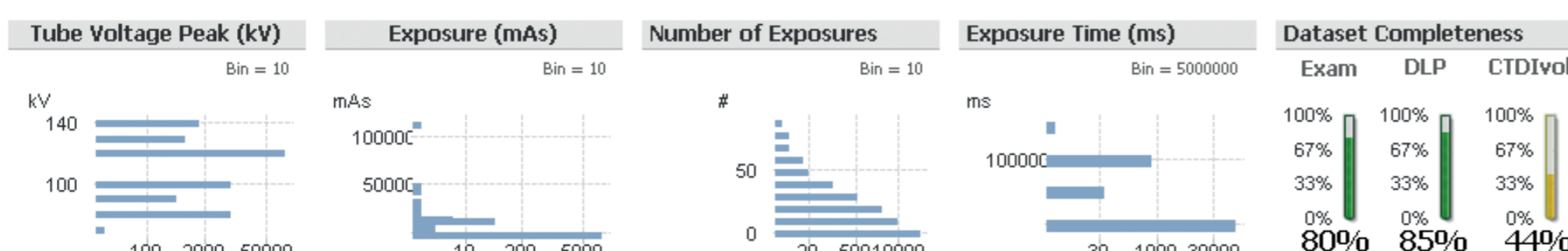
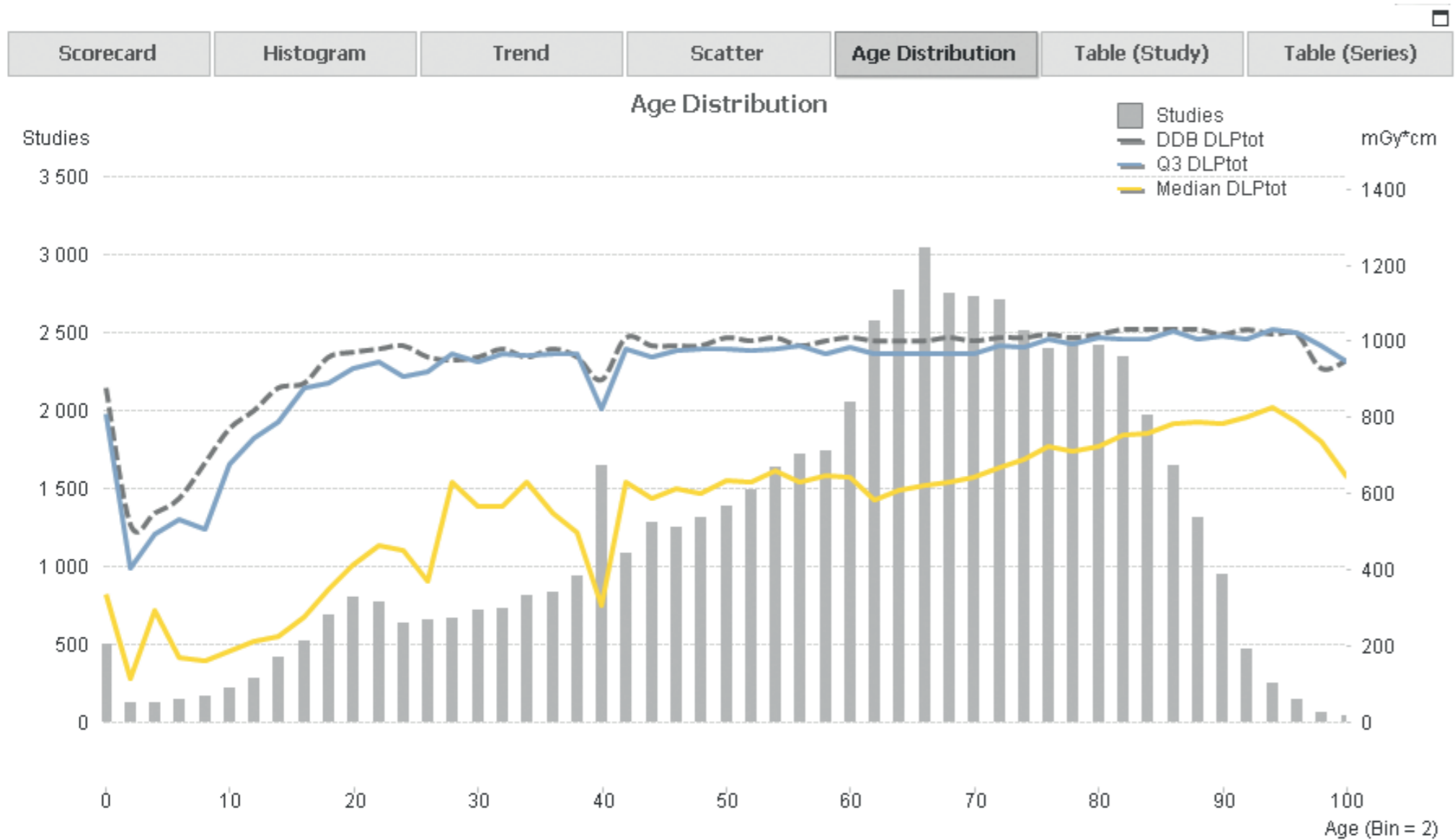
product, which underpins and provides the reports and metrics required to implement and proactively manage a dose management strategy.

We feel it is essential to take a more holistic approach to patient dose management and reduction in order to truly achieve the goals and principals of ALARA. Sectra products are designed specifically to integrate into the patient pathway, assist in the improvement of care and, through their use, bring about a reduction in patient dose exposure. The route to patient dose reduction starts at the beginning of the patient's journey with the use of sophisticated electronic ordering solutions, such as Sectra Order Management. Improving the accuracy and timeliness of imaging requests helps imaging departments provide the most appropriate procedure in a timely fashion for the patient. Embedded integration to Sectra DoseTrack provides a full patient imaging and radiation dose history at the point of request. Decision support functionality and integration into web-based image viewers such as Sectra LiteView™ provide the referring clinician with all of the resources required to make imaging requests.

Justifying requests

Moving into the imaging department, the justification of imaging requests is one the main means to ensure that only clinically valid and relevant requests are undertaken by the department. Sectra RIS and PACS products contain dedicated functionality to assist the clinician in achieving this. The value of a well-designed solution for optimising the performance of request justification should not be underestimated. The radiation dose savings to the patient by rejecting/modifying duplicate or inappropriate requests is significant in reducing radiation dose, both to the individual and across the patient population as a whole.

Imaging protocols and procedures can be effectively managed by the advanced functionality contained within Sectra RIS, PACS and DoseTrack products. It is well known that the standardisation of protocols throughout an organisation leads to significant reductions in patient dose. The Sectra vetting module allows users to develop, maintain and assign protocols to procedures at the justification and vetting stage of request management. Sectra DoseTrack supports this process by providing the facts and metrics required to define new protocols and improve existing ones. Sectra DoseTrack allows prospective dose management to take place by allowing customers to perform "dry runs" of scans, change protocol parameters and understand the patient dose effects by changing the parameters.



Post-procedural analysis

Post-procedural analysis of patient dose is undertaken using Sectra DoseTrack. This allows for detailed analysis of the actual modality data and allows departments to investigate all of the different factors which affect patient dose. The comparison and analysis of equipment, departments, radiographic staff and patients can all be performed from within the solution. Simple reviews of referral patterns can assist managers in finding "rogue" referrers who may be using the imaging service improperly. Comparison of radiographic staff can help to identify operators who may require additional training or who are not following departmental protocols. The identification of patients who have received doses higher than expected is essential to the radiation protection staff. Equipment maintenance planning can be achieved far more elegantly and consumable replacements such as tubes estimated more accurately from the system giving financial benefits to the department.

Image sharing helps reduce patient dose

Sectra offers two foundation technologies designed to enable cross-enterprise image sharing; The Sectra IEP (Image Exchange Portal) and a XDS solution for connecting and sharing. Both of these solutions offer healthcare providers huge opportunities to dramatically reduce cumulative patient dose and improve productivity.

The Sectra IEP is an image sharing network which originated as the UK National image sharing solution. It currently transmits some 50,000 Patient studies each week in the UK alone. This has radically changed the way hospitals work together and reduces patient dose, due to unnecessary examinations, dramatically. The IEP allows patient images to be sent to any known location and automatically imported into the local PACS. This supports the transfer of patients to specialist treatment centres along with their imaging and, typically, in advance of the patient's arrival. This allows clinical decisions to be made while the patient is in transit. Urgent care can commence immediately without the need for repeat imaging to take place, leading to an improvement in clinical outcome and a potentially large reduction in radiation dose to the patient.

Sectra's solution for connecting and sharing via XDS allows hospitals to create healthcare communities and share diagnostic and image data in a single consolidated virtual patient record. Making all imaging and results data accessible to the healthcare community at the point of care, regardless of location, can reduce the number of repeat requests for imaging, improve patient care and offer a significant reduction in patient dose.



Conclusion

The creation of collaborative clinical networks using the technologies above reduces patient dose and improves patient care. The creation of a paediatric network, which allows participants to rapidly seek a second opinion and expert advice without the need for re-imaging, also reduces patient dose and improves patient care. The standardisation of protocols and comparative dose monitoring can also be achieved in order to drive dose down by departments by sharing experiences and techniques in real time.