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Clinical Dose Optimization Service™

Clinical Dose Optimization Service (CDOS) – Scope of Services

The LANDAUER Clinical Dose Optimization Service modular program enhances the quality and safety of imaging operations. It is designed to fulfill state regulations, Joint Commission accreditation requirements, the American Association of Physicists in Medicine recommendations, in addition to providing state-of-the-art physics support.

Description of Services

LANDAUER has developed facility and enterprise service packages for clients to consider when selecting their approach to CT clinical dose optimization. To assist in that decision, the LANDAUER team works with clients to discuss what best matches their current needs, including add-on services such as fluoroscopy clinical dose optimization and enterprise dose optimization.

In all selections, clients can rely on receiving top level service with a clearly defined set of activities. This includes discovery —through dose alerts and data analysis—already proven successful for hundreds of hospitals across the country.

Service levels offer:

- A comprehensive CT dose audit based on the Joint Commission requirements related to patient dose and CT protocol review with a gap analysis and a complete set of recommendations to mitigate deficiencies
- A LANDAUER delivery team dedicated to streamline implementation steps including collection of radiation dose indices
- Guidance with CT nomenclature and protocol mappings and expected dose ranges
- Recommended alert levels for client Dose Tracking System (DTS) configuration
- Providing best practices CT protocols for comparison, which contain data from various CT equipment manufacturers in use in facilities across the nation
- A dose trend analysis that illustrates patient quality of care improvements

Assistance with establishing and maintaining a Clinical Dose Optimization Committee with ongoing physicist participation

- Reporting of summary dose alerts, protocol reviews, trending for system-wide dose reviews, and actionable recommendations for clinically relevant CT protocols
- Accumulation and dose analysis of all facilities across the enterprise

Client Role

As part of the service, LANDAUER's dedicated delivery team will manage the implementation of CDOS. To facilitate a smooth transition, the client is asked to provide a single point of contact to coordinate internally with departments such as Radiation Safety, Information Technology, Contract Management and Legal, and other departments as needed.

Other recommendations include:

- Implementing a tool to collect radiation dose indices with either a dose tracking system (DTS) or a relevant service. If neither exists at the facility, LANDAUER can assist in establishing manual processes to identify cases that exceed expected dose ranges.

In addition, clients are asked to:

- Establish a Patient Dose Review Committee (PDRC). This committee should consist of at least one interpreting radiologist and lead technologist supported by a LANDAUER expert medical physicist.
- Schedule recurring PDRC meetings and notify attendees at least one month in advance

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- Approve dose alert levels for each imaging protocol; consider LANDAUER recommendations based on facility goals and imaging equipment
- Grant LANDAUER secure remote access to its dose tracking system
- Approve and implement all protocol changes and training recommendations

Timeline:

The dedicated LANDAUER CDOS Team will immediately schedule implementation activities that may include:

- The Joint Commission CT protocol and CT patient dose gap analysis
- Protocol mapping guidance
- PDRC Meetings. LANDAUER will provide an expert medical physicist to participate in PDRC Meetings. It is recommended that the facility schedule the first PDRC Meeting within the first three months of starting the service.
- Initial dose alert level recommendations. LANDAUER will provide initial dose alert recommendations based on external references within one month of starting the service.
- Dose monitoring program setup and configuration. LANDAUER will begin working on entering the dose alerts and configuring the dose monitoring software immediately upon having a remote connection to the dose monitoring program.
- Quarterly detailed protocol reports. Quarterly reports will begin once configuration of the dose monitoring program is completed.

Clinically Relevant Protocols

The following list contains the clinically relevant protocols which comprise more than 90% of the volume of CT studies submitted to the American College of Radiology Dose Index Registry (ACR DIR).

BODY	HEAD AND NECK	MSK
CT ABDOMEN	CT HEAD BRAIN	CT C SPINE
CT ABDOMEN PELVIS	CT HEAD MAXILLOFACIAL	CT L SPINE
CT ABDOMEN PELVIS KIDNEY CALC	CT HEAD NECK ANGIO	CT PELVIS
CT CHEST	CT HEAD ORBITS	CT T SPINE
CT CHEST ABDOMEN PELVIS	CT HEAD PARANASAL SINUSES	
CT CHEST HEART	CT HEAD PERFUSION	
CT CHEST LOW DOSE	CT NECK	
CT CHEST PULMONARY ARTERIES		

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How to identify cases exceeding expected dose ranges

The Joint Commission has explicitly stated that all cases that exceed expected dose ranges need to be reviewed and compared to external benchmarks. The Joint Commission does not specify any software or equipment necessary to satisfy this requirement. However, based on the tools available, various amounts of manual labor will be needed to meet this requirement. Below are the most common approaches to identify cases that exceed expected dose ranges.

1. **Dose monitoring program:** All the mainstream dose monitoring programs include a method to identify cases that exceed programmed thresholds. Most programs support automated email alerts for these cases. Further, most programs allow the physicist to enter comments documenting information relevant to each particular case.
2. **The ACR DIR:** The ACR DIR collects patient dose data similarly to dose monitoring programs, except that the data is anonymized. Additionally, the ACR DIR does not support email alerts for cases exceeded programmed thresholds. Therefore, the ACR DIR itself does not allow analysis and benchmarking of cases that exceed expected dose ranges. It is possible to manually identify the date and time of cases exceeded expected dose ranges. LANDAUER will incorporate this data into the regular CDOS reports.
3. **Manual entry:** The facility may elect to manually record cases that exceed expected dose ranges at the time the study is conducted and send them to LANDAUER at regular intervals. It is the facility's responsibility to ensure that all cases exceeding expected dose ranges are documented and sent to LANDAUER.
4. **Dose check:** Once Dose Check is configured properly, it can keep a log of cases that exceed the notification values. This log must be sent to LANDAUER to be incorporated into the regular CDOS reports.

Learn more

Visit landauermp.com/cdos or email imagingsales@landauer.com

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