SAMSUNG

EXPERIENCE A New Healthcare Solution

Mobile CT Imaging

Ibrahim Bechwati Ph.D.



Computed Tomography



Ultrasound



Digital Radiography

Background

- Company started in 2004 with the idea to build a small scanner that can be brought to the patient bedside.
- It has to be simple to use so it can be operated by regular staff.
- The CereTom, accredited through ICACTL, was the first mobile scanner
- The first scanner was built in 2006.
- Early adopters were Lahey Clinic, MGH, Cleveland Clinic.
- Six years later the BodyTom, first full body mobile scanner was developed.
- The OmniTom, new head/pediatric scanner introduced in 2017.
- The first use of a CereTom in MSU was around 2012.
- The first use of a BodyTom in a Mobile Unit was 2017.
- Around 500 installed CereTom and 150 BodyTom.





The Scanner

- Third Generation scanners with true fan beam Geometry.
- Scans are batteries powered.
- Each scanner meets the FDA CFR 21 requirements and the IEC standards.
- Each scanner is rigorously tested for reliability and image quality using the AAPM and ACR guidelines.
- Each scanner meets the ACR Low Contrast CNR accreditation requirements.
- Each scanner is to be approved by the site physicist prior to any patient scanning.
- The scanner is fully functional: NeCT, CTA, CTP and scouts.
- The scanner provide diagnostically acceptable images at a reasonable patient dose.
 Ultrasound | Digital Radiography | Computed Tomography

Ceretom and Omnitom



	CereTom	OmniTom
Bore Size	32 cm	40 cm
Detector Size	1.25 mm (8 Slice)	0.625 mm (16 Slice)
Field of View	25 cm	30 cm
Power	1 kW (5-7 mA)	6 kW (5-45 mA)
Reconstruction Speed	8 image/second	16 image/second
Drive System	Manual	Internal Drive System
Battery	Lead-Acid	Lithium

Ceretom and Omnitom



	BodyTom
Bore Size	85 cm
Detector Size	1.25 (32 slices)
Field of View	~60 cm
Power	42 kW
Reconstruction Speed	~32 images/second
Drive System	Internal
Battery	Lithium

Mobile Stroke Unit

• Ceretom inside the MSU





Need for Mobility

The availability of the scanner in the ICU can:

- Eliminate the need to move the patient.
- Reduce the cost of moving patient to Radiology suits.
- Free resources needed elsewhere.

The presence of the scanner in the OR can:

- Provide real time scanning.
- Inter-operative scans for quick verification.
- Placement verification prior to radiation treatment.

Provide un-expensive solution for high-cost CT scanners to low-income, rural hospitals.

Eliminate the need for high-cost infrastructures required for fixed scanners.

Dose and Scatter Reduction

• The CereTom scanner is self shielded. The cover are leaded to provide a total protection to the staff.

• The leaded covers prevent any scatter radiation from the inside of the scanner.

- The BodyTom and the OmniTom are partially shielded to minimize the scatter radiation.
- Addition lead curtains are used to reduce the scatter from the scanned patient.



Dose and Scatter Reduction

The scanners is equipped with all the measured needed for optimizing the dose to the patient:

- 1. It offers the capability of customized reconstruction.
- 2. It is capable of Automatic Exposure Control using a single scout scan.
- 3. Customized Noise Reduction:
 - The default level of the noise reduction is set based on clinical review however, if needed the level can be adjusted.
- 4. Customized Reconstruction Kernels:
 - 1. A set of customized kernels that can fit the existing clinical protocols of the site providing seamless integration of the scanner with the CT department.

Scan on Demand or Point-of-care scanning

- By providing a scan on demand the scanners optimize the patient treatment as well as the workflow of the CT department.
- Some of the places where the benefit of Mobile scanning making a difference:
 - Mobile Stroke Unit: A timely manner CT head scan can shorten the time to tPA or help in directing the patient to the proper treatment facility.
 - Mobile Lung Screening: The Bodytom is being used for bringing lung screening into remote rural areas.
 - The Bodytom: The scanner is currently providing scans for Covid-19 screening in designated enclosures.

BodyTom in Use



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Diagnostic mages

Diagnostic Radiology Images



Pancreatic Mass



Diagnostic Stroke



Hematoma Coronal



Diagnostic Subdural Hematoma



2D MIP Lung with Vascular Detail







Diagnostic Lung Cancer



Sample Images (Axial Scan)







Noise Reduction



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Metal Artifact Reduction





Questions?



Computed Tomography



Ultrasound



Digital Radiography