NC DEPARTMENT OF
**HEALTH AND
HUMAN SERVICES**

ROY COOPER • Governor
KODY H. KINSLEY • Secretary
MARK PAYNE • Director, Division of Health Service Regulation

VIA EMAIL ONLY

October 15, 2024

Jeffery Shovelin
jshoveli@ecuhealth.org

Exempt from Review – Replacement Equipment
Record #:   **4599**
Date of Request: September 26, 2024
Facility Name: ECU Health Chowan Hospital
FID #:   933102
Business Name: East Carolina Health-Chowan, Inc.
Business #:   676
Project Description: Replace existing nuclear medicine camera
County: Chowan

Dear Mr. Shovelin:

The Healthcare Planning and Certificate of Need Section, Division of Health Service Regulation (Agency), determined that the above referenced project is exempt from certificate of need review in accordance with G.S. 131E-184(a)(7). Therefore, you may proceed to acquire without a certificate of need the GE Discovery NM850 fixed nuclear medicine camera to replace the GE Millenium MG model #ASM000163 fixed nuclear medicine camera serial #989. This determination is based on your representations that the existing unit will be sold or otherwise disposed of and will not be used again in the State without first obtaining a certificate of need if one is required.

It should be noted that the Agency's position is based solely on the facts represented by you and that any change in facts as represented would require further consideration by this office and a separate determination. If you have any questions concerning this matter, please feel free to contact this office.

Sincerely,

Gregory F. Yakaboski
Project Analyst

Micheala Mitchell
Chief

cc: Acute and Home Care Licensure and Certification Section, DHSR
        Construction Section, DHSR

NC DEPARTMENT OF HEALTH AND HUMAN SERVICES • DIVISION OF HEALTH SERVICE REGULATION

HEALTHCARE PLANNING AND CERTIFICATE OF NEED SECTION

LOCATION: 809 Ruggles Drive, Edgerton Building, Raleigh, NC 27603
MAILING ADDRESS: 809 Ruggles Drive, 2704 Mail Service Center, Raleigh, NC 27699-2704
https://info.ncdhhs.gov/dhsr/ • TEL: 919-855-3873

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER

GE Healthcare

ADDENDUM TO QUOTATION

This Addendum to Quotation(s) ("Addendum"), effective as of last signature date indicated in the signature area of this Addendum ("Effective Date") is entered into by and between the Customer and the GE Healthcare business ("GE Healthcare"), each as identified on the GE Healthcare quotation(s) which are liste in Exhibit A attached hereto and incorporated herein by reference (each, a "Quotation" and, collectively, the "Quotations").

WHEREAS, GE Healthcare has provided Customer with the Quotation(s) concerning GE Healthcare's desi to sell to Customer, and Customer's agreement to purchase from GE Healthcare, certain GE Healthcare products and/or services listed on each Quotation in accordance with the terms and conditions set forth on each Quotation (each, an "Agreement" and collectively, the "Agreements"); and

WHEREAS, the parties now desire to amend and/or supplement the Agreement(s) in accordance with the terms and conditions set forth herein.

NOW THEREFORE, in consideration of the premises and the representations and mutual undertakings hereinafter set forth, and for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree to the foregoing and as follows:

- Notwithstanding anything to the contrary in the Agreements, the parties agree that the Managed Equipment Services Agreement dated September 1, 2022 between Customer and GE Healthcare sha be the Governing Agreement.
- As a matter of administrative convenience, the parties agree to the Terms and Conditions of Quotation listed in Exhibit A by signature of this Addendum.
- Customer's form of payment is as follows:

Initial to indicate form of payment:
(If potential for a lease exists, GE HFS or otherwise, select lease)

_____ Cash*   __✓__ Lease _____ HFS Loan
If leasing please provide name of finance company below:

_____

*Selecting cash declines option for GE HFS financing
*Cash is the default option if this addendum is signed and the form of payment is not indicated above.

Initial to indicate tax status for Service* (If applicable):

_____ Exempt from Sales and Use Tax (NOTE: GEHC must have a Current Tax Exemption Certificate)

__✓__ Subject to Sales and Use Tax**
*Equipment tax status as set forth on the Equipment Quotation
**Subject to Sales and Use Tax is the default option if this addendum is signed and the tax status is not indicated above.

Enter PO Information (if applicable):

PO # for Equipment:_____

PO # for Service*:_____
*Denote "same" if only 1 PO is needed for both Equipment and Service

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Entire Agreement. In the event of any conflict between the terms and conditions of this Addendum on the one hand, and each Agreement on the other hand, the terms and conditions of this Addendum shall govern and control. Except as otherwise expressly provided in the Addendum, the parties agree that all provisions of each Agreement are hereby ratified and agreed to be in full force and effect and are incorporated herein I reference. This Addendum and each Agreement contain the entire agreement among the parties related to the subject matter herein and all prior proposals, discussions and writings by and among the parties and relating to the subject matter herein are superseded hereby and thereby.

In WITNESS WHEREOF, Customer and GE Healthcare have caused this Addendum to be executed by the duly authorized representatives as of the Effective Date.

ECU Health	GE Healthcare
Signature:	Signature: _Mary E Schroeder_ Mary E Schroeder
Print Name: Michael R. Waldrum, M.D	Print Name: Mary E Schroeder
Title: CEO	Title: Executive, Strategic Clients
Date: 12-14-22	Date: 12/14/2022

ID# 230257914

F

Quotation Number	Quotation Date
2007874014.13	Friday, November 4, 2022

Quotation Number	Quotation Date
2007960738.7	Friday, November 4, 2022

Quotation Number	Quotation Date
2007884424.6	Friday, November 4, 2022

Quotation Number	Quotation Date
2008070849.4	Friday, November 4, 2022

Quotation Number	Quotation Date
2007965851.11	Friday, November 4, 2022

Quotation Number	Quotation Date
2008070553.7	Friday, November 4, 2022

Quotation Number	Quotation Date
2008070557.6	Friday, November 4, 2022

Quotation Number	Quotation Date
2007913958.9	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009623413.1	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009623416.1	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009623426.1	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009623433.1	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009623444.1	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009623450.1	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007913937.5	Monday, November 28, 2022

Quotation Number	Quotation Date
2007914538.11	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009205222.2	Monday, November 28, 2022

Quotation Number	Quotation Date
2009205194.2	Monday, November 28, 2022

Quotation Number	Quotation Date
2007913955.5	Monday, November 28, 2022

Quotation Number	Quotation Date
2007913945.5	Monday, November 28, 2022

Quotation Number	Quotation Date
2007913921.5	Monday, November 28, 2022

Quotation Number	Quotation Date
2007696876.10	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2006610601.4	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007914004.4	Monday, November 28, 2022

Quotation Number	Quotation Date
2007913976.9	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007911482.5	Monday, November 28, 2022

Quotation Number	Quotation Date
2007874082.8	Friday, November 4, 2022

WF 02097414.0

2007874098.3	Friday, November 4, 2022

Quotation Number	Quotation Date
2009053014.4	Friday, November 4, 2022

Quotation Number	Quotation Date
2004612240.15	Friday, November 4, 2022

Quotation Number	Quotation Date
2007281874.2	Friday, November 4, 2022

Quotation Number	Quotation Date
2007874011.11	Friday, November 4, 2022

ECHO
CT

Quotation Number	Quotation Date
2007874027.10	Friday, November 4, 2022

Quotation Number	Quotation Date
2007874034.8	Friday, November 4, 2022

Quotation Number	Quotation Date
2008070538.5	Friday, November 4, 2022

ECHO
MRI

Quotation Number	Quotation Date
2008070542.5	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2008070561.5	Friday, November 4, 2022

Quotation Number	Quotation Date
2008070724.3	Friday, November 4, 2022

Quotation Number	Quotation Date
2008070749.2	Friday, November 4, 2022

Quotation Number	Quotation Date
2007914871.11	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007914901.15	Wednesday, November 16, 2022

WF 02097414.0

Quotation Number	Quotation Date

Quotation Number	Quotation Date
2009622281.2	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2008071820.10	Wednesday, November 16, 2022

EROA
CT

Quotation Number	Quotation Date
200838581.6	Friday, November 4, 2022

Quotation Number	Quotation Date
2009184324.4	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009554455.1	Friday, November 4, 2022

ECHO
Nuc Med

Quotation Number	Quotation Date
2009554464.1	Friday, November 4, 2022

Quotation Number	Quotation Date
2007911485.3	Monday, November 28, 2022

Quotation Number	Quotation Date
2009327606.3	Wednesday, November 16, 2022

Quotation Number	Quotation Date
200790982.14	Friday, November 4, 2022

Quotation Number	Quotation Date
2007914009.10	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007913862.9	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2008575106.6	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007914722.13	Wednesday, November 16, 2022

Quotation Number	Quotation Date

WF 02097414.0

Quotation Number	Quotation Date

Quotation Number	Quotation Date
2007911470.4	Monday, November 28, 2022

Quotation Number	Quotation Date
2007913940.8	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007913946.10	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009623351.1	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007913953.9	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007913970.9	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007913993.9	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009623369.1	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009623388.1	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007913930.9	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2009623334.1	Friday, December 16, 2022

Quotation Number	Quotation Date
2007911478.4	Monday, November 28, 2022

Quotation Number	Quotation Date
2009622315.2	Monday, November 28, 2022

WF 02097414.0

Quotation Number	Quotation Date
2009622339.2	Wednesday, November 16, 2022

Quotation Number	Quotation Date
2007696894.8	Wednesday, November 16, 2022

⊕ECU HEALTH

September 10, 2024

Ms. Micheala Mitchell
Chief, Healthcare Planning and Certificate of Need
Division of Health Service Regulation
NC Department of Health and Human Services
2704 Mail Service Center
Raleigh, NC 27699-2704

FILED ELECTRONICALLY

RE: Request for Exemption Pursuant to G.S. 131E-184(a7) / East Carolina Health – Chowan, Inc., d/b/a ECU Health Chowan Hospital / Replace an Existing Nuclear Medicine Camera / Chowan / FID #: 933102

Dear Ms. Mitchell,

ECU Health Chowan Hospital (ECHO) plans to replace an existing nuclear medicine camera with new equipment on its main hospital campus located in Edenton, NC (Chowan County). ECHO believes that the proposed equipment replacement is not subject to review under North Carolina's Certificate of Need (CON) laws.

The proposed project includes the replacement of a Siemens E-CAM nuclear medicine camera with a GE Discovery NM630 nuclear medicine camera. The total capital costs for the proposed replacement are estimated to be $2,822,671 (see Appendix B for the capital cost sheet). These costs include all expenses associated with the equipment and renovations.

ECHO believes the proposed project is exempt from CON review under G.S. 131E-184(a7) – replacement equipment. ECHO believes the proposed project meets the definition of replacement equipment as defined by G.S.131E-176(22a) in that:

1. The total cost of the replacement equipment is less than $2,971,200,
2. The equipment is being purchased for the sole purpose of replacing comparable medical equipment currently in use (see Appendix A for equipment comparison table, Appendix C for vendor quotes, and Appendix D for a brochure for the new equipment),
3. The existing equipment will be sold or otherwise disposed of when replaced,
4. The replacement equipment will be located in the same location as the existing equipment (see Appendix E for site and floor plans), and
5. The reason for the replacement is due to the existing equipment is past the age of its useful life.

Since ECHO's proposal meets the definition of "replacement equipment", G.S. 131E-184(a7) exempts this project from CON review. Therefore, ECHO requests approval of an exemption status for the proposed project.

In the event the project exceeds the $2,971,200 equipment replacement threshold, ECHO believes the proposed project would still be exempt from review under G.S. 184(f) since the replacement equipment will be located on the main campus of a licensed health service facility and the existing equipment was acquired through an exemption in 2005.

ECU HEALTH

If you require additional information or clarification, please contact me at (252) 847-3631 or jshoveli@ecuhealth.org.

Thank you.

Jeffrey Shovelin
VP of Business Planning and Strategy, ECU Health
PO Box 6028, Greenville NC 27835-6028
252-847-3631
jshoveli@ecuhealth.org

Appendix A
Equipment Comparison Table

EQUIPMENT COMPARISON

	EXISTING EQUIPMENT	REPLACEMENT EQUIPMENT
Type (e.g., Cardiac Catheterization, Gamma Knife®, Heart-lung bypass machine, Linear Accelerator, Lithotriptor, MRI, PET, Simulator, CT Scanner, Other Major Medical Equipment)	Nuclear Medicine Camera	Nuclear Medicine Camera
Manufacturer	GE	GE
Model number	Millenium MG #ASM000163	Discovery NM850
Other method of identifying the equipment (e.g., Room #, Serial Number, VIN #)	Serial #: 00000000000989	Serial Number TBD
Is the equipment mobile or fixed?	Fixed	Fixed
Date of acquisition	9/30/2005	TBD
Was the existing equipment new or used when acquired? / Is the replacement equipment new or used?	New	New
Total projected capital cost of the project <Attach a signed Projected Capital Cost form>	N/A	$2,822,671 (see Appendix B for details)
Total cost of the equipment	$329,455	$644,671
Location of the equipment <Attach a separate sheet for mobile equipment if necessary>	ECU Health Chowan Hospital 211 Virginia Road Edenton, NC 27932	ECU Health Chowan Hospital 211 Virginia Road Edenton, NC 27932
Document that the existing equipment is currently in use	Over last 12 months, 289 procedures were performed on the existing unit	N/A
Will the replacement equipment result in any increase in the **average charge per procedure**?	N/A	No
If so, provide the increase as a percent of the current average charge per procedure	N/A	N/A – See Above
Will the replacement equipment result in any increase in the **average operating expense per procedure**?	N/A	No
If so, provide the increase as a percent of the current average operating expense per procedure	N/A	NA – See Above

Type of procedures performed on the existing equipment <Attach a separate sheet if necessary>	General Nm Procedures	N/A
Type of procedures the replacement equipment will perform <Attach a separate sheet if necessary>	N/A	General NM Procedures (see brochure in Appendix D for additional information)

Date of last revision: 5/17/19

Appendix B

Capital Cost Sheet

CAPITAL COST SUMMARY - ECHO Nuc Med Replacement

Site Costs

(1) Full purchase price of land	$ 0	
Acres 0 Price per Acre $_____		
(2) Closing costs	$ 0	
(3) Site Inspection and Survey	$ 0	
(4) Legal fees and subsoil investigation	$ 0	
(5) Site Preparation Costs [Include]		
Soil Borings		
Clearing and Grading		
Roads and Parking		
Sidewalks		
Water and Sewer		
Excavation and Backfill		
Termite Treatment		
Sub-Total Site Preparation Costs	$ 0	
(6) Other (Specify)	$ 0	
(7) Sub-Total Site Costs		$ 0

Construction Contract

(8) Cost of Materials [Include]		
General Requirements		
Concrete/Masonry		
Woods/Doors & Windows/Finishes		
Thermal & Moisture Protection		
Equipment/Specialty Items		
Mechanical/Electrical		
Sub-Total Cost of Materials	$ 1,023,787	
(9) Cost of Labor	$ 682,525	
(10) Other (DHSR Review Fee)	$ 1,045	
(11) Sub-Total Construction Contract		$ 1,707,357

Miscellaneous Project Costs

(12) Building Purchase	$ 0	
(13) Fixed Equipment Purchase/Lease	$ 644,671	
(14) Movable Equipment Purchase/Lease	$ 0	
(15) Furniture	$ 0	
(16) Landscaping	$ 0	
(17) Consultant Fees		
Architect and Engineering Fees	$ 170,643	
Legal Fees	$ 0	
Market Analysis	$ 0	
CON Preparation	$ 0	
Sub-Total Consultant Fees	$ 170,643	
(18) Financing Costs (e.g. Bond, Loan, etc.)	$ 0	
(19) Interest During Construction	$ 0	
(20) Other (Mobile rental during construction)	$ 300,000	
(21) Sub-Total Miscellaneous		$ 1,115,314
(22) Total Project Capital Cost (Sum A-C above)		$ 2,822,671

I assure that, to the best of my knowledge, the above capital costs for the proposed project are complete and correct and it is my intent to carry out the proposed project as described.

(signature)

Appendix C

Equipment Quote

GE Healthcare

East Carolina Health Chowan, Inc. d/b/a ECU Health Chowan Hospital
211 Virginia Rd
Edenton, NC 27932-9668

This Agreement (as defined below) is by and between the Customer and the GE Healthcare business ("GE Healthcare"), each as identified below for the sale and purchase of the Products and/or Services identified in this Quotation, together with any applicable schedules referred to herein ("Quotation"). "Agreement" is this Quotation and either: (i) the Governing Agreement identified below; or (ii) if no Governing Agreement is identified, the GE Healthcare Terms and Conditions and Warranties that apply to the Products and/or Services identified in this Quotation. In the event of conflict, the Quotation supersedes.

GE Healthcare can withdraw this Quotation at any time before Customer: (i) signs and returns this Quotation or (ii) provides evidence of Quotation acceptance satisfactory to GE Healthcare ("Quotation Acceptance"). On Quotation Acceptance, this Agreement is the complete and final agreement of the parties relating to the Products and/or Services identified in this Quotation. There is no reliance on any terms other than those expressly stated or incorporated by reference in this Agreement and, except as permitted in this Agreement, no attempt to modify will be binding unless agreed to in writing by the parties. Modifications may result in additional fees and cannot be made without GE Healthcare's prior written consent.

Handwritten or electronic modifications on this Agreement (except an indication of the form of payment, Customer purchase order number and signatures on the signature blocks below) are void.

Governing Agreement:	Vizient Q4-2022 Group Buy Pricing
Terms of Delivery	FOB Destination
Billing Terms	80% on Delivery / 20% on Acceptance
Payment Terms	45 Net
Total Quote Net Selling Price	$644,670.87
Sales and Use Tax Exemption	No Certificate on File

IMPORTANT CUSTOMER ACTIONS:

Please select your planned source of funds. Source of funds is assumed to be cash unless you choose another option. Once equipment has been shipped, source of funds changes cannot be allowed.

___ Cash

___ GE HFS Loan   ___ GE HFS Lease

___ Other Financing Loan   ___ Other Financing Lease   Provide Finance Company Name _____

The parties have caused this Agreement to be executed by their authorized representative as of the last signature date below.

East Carolina Health Chowan, Inc. d/b/a ECU Health Chowan Hospital	GE Precision Healthcare LLC, a GE Healthcare business
Signature: _____	**Signature:** John Cruz
Print Name: _____	**Title:** Lead Sales Specialist Imaging
Title: _____	**Date:** October 28, 2022
Date: _____	
_____ Purchase Order Number, if applicable	

GE Healthcare

To Accept This Quotation

Please sign and return this quotation together with your Purchase Order to:

Name: John Cruz

Email john.cruz@ge.com

Phone: (919) 621-3653

Fax:

Payment Instructions

Please **remit** payment for invoices associated with this quotation to:

GE Precision Healthcare LLC
P.O. Box 96483
Chicago, IL 60693

FEIN: 83-0849145

East Carolina Health Chowan, Inc. d/b/a ECU Health Chowan Hospital

Addresses:

Bill To: East Carolina Health Chowan, Inc.   211 Virginia Rd, Edenton, NC, US, 27932-9668
d/b/a ECU Health Chowan Hospital

Ship To: East Carolina Health Chowan, Inc.   211 Virginia Rd, Edenton, NC, US, 27932-9668
d/b/a ECU Health Chowan Hospital

To Accept This Quotation
- Please sign the quote and any included attachments (where requested).
- If requested, please indicate your form of payment.
- If you include a purchase order, please make sure it references the following information:
    - The correct Quote number and Version number above
    - The correct Remit To information as indicated in **"Payment Instructions"** above
    - Your correct SHIP TO and BILL TO site name and address
    - The correct Total Price as indicated above

Upon submission of a purchase order in response to this quotation, GE Healthcare requests the following to evidence agreement to contract terms: Signature page on quote filled out with signature and P.O. number   **** OR**** Verbiage on the purchase order must state one of the following:

(i)Per the terms of Quotation # _____, (ii) Per the terms of GPO #_____; (iii) Per the terms of MPA# _____: or (iv) Per the terms of SAA # _____.

Include applicable quote/agreement number with the reference on the purchase order. In addition, Source of Funds (choice of Cash/Third Party Load or GE HFS Lease Loan or Third Party Lease through _____), must be indicated, which may be done on the Quote Signature Page (for signed quotes), or the Purchase Order (where quotes are not signed) or via a separate written source of funds statement (if provided by GE Healthcare)."

![GE Healthcare logo]

Catalog Item Details

Line	Qty.	Catalog	
1	1.00	Y0000LC	**Pricing Non-Disclosure Language**

This CONFIDENTIAL offer may not be shared with any third parties, buying evaluation groups or anyone not directly employed by customer. This offer is being extended in relation to a national show-site agreement, research partnership, or other non-standard transaction. If required for publishing, GE will happily provide a list price quote.

Line	Qty.	Catalog	
2	1.00	S3907AD	**NM/CT 850 3/8 inch Detector**

NM/CT 850 system is a hybrid SPECT/CT imaging system combining a nuclear imaging camera with a hybrid-dedicated low-dose CT subsystem. It has an all-purpose, dual-detector, free-geometry integrated nuclear imaging camera that features the advanced Elite NXT detector technology, slim gantry, cantilevered patient table, an Acquisition station and Smart Console digital processing workstation, now combined with a Revolution ACTs CT that has been adapted for low-dose hybrid-dedicated use within the NM/CT 850 imaging system.
The Elite NXT detectors feature 3/8" or 5/8" thick detectors for all-purpose nuclear imaging.
The adapted low-dose hybrid-dedicated Revolution ACTs is an 8-Slice CT with short geometry designed gantry and New Clarity panel detector HiLight™ scintillator with DAS on detector (DoD) and other advanced OptiDose* dose management features.
Key features of the free-geometry NM/CT 850 design include:
• Slim-profile, wide-bore, robotic gantry design
• 180° and 90° orientations of the NM detectors for high SPECT and WB scanning efficiency
• Rapid, simultaneous multi-axis gantry motions
• Upright and horizontal detector orientations for exceptional clinical versatility, including patients that are in a hospital bed, standing or sitting during scan
• Multi-functional, dual-axis imaging table
• Automatic "home" positioning enables easy setup of the gantry and the table using pre-programmed detector geometries and imaging modes
• Real-time automatic body contouring
• User-friendly, intuitive Linux-based user interface
• CT imaging sub-system for low-dose Hybrid SPECT/CT applications including attenuation correction and localization
• Smart Console™ provides automated processing, connectivity, and user collaboration tools, for enhanced workflow and accessibility.
• Ignite integrated workflow with Xeleris processing and review workstation designed to help enhance departmental productivity

The Evolution for Bone SPECT Camera License enables the acquisition of Evolution for Bone SPECT data sets on 800 series cameras. The Evolution for Bone SPECT algorithm models the collimator-detector response, improves Bone SPECT resolution, signal to noise ratios and reduces noise variability. Evolution for Bone SPECT enables improved resolution of bone SPECT studies acquired over standard acquisition time or non-inferior image quality with up to 50% reduction in count density, achieved by either imaging at ½ acquisition time or injecting with ½ dose (or any combination of the two) when compared to standard bone SPECT imaging protocols. The Evolution for Bone reconstruction is an additional module within the Q.Volumetrix MI application.
The Evolution for Planar Bone Camera License enables the acquisition of Evolution for Planar Bone data sets on the 800 series cameras. The Evolution for Planar Bone includes a noise reduction algorithm that preserves the finest structures in the image using well-suited pixel size and optimal energy window settings. This Adaptive Structure Matching Non-Local Filter enables improved planar image quality for the same scan time, shorter planar scan time while preserving image quality, or reduced injected dose with the same scan time while preserving image quality. The Evolution for Planar Bone reconstruction is an additional module within the Whole Body Bone and Spots Review application.
The Evolution for Cardiac Camera License enables the acquisition of Evolution for Cardiac data sets on the 800 series cameras. The Evolution for Cardiac resolution recovery algorithm models the collimator-detector response, improves cardiac SPECT resolution, signal to noise ratios and reduces noise variability. Evolution for Cardiac provides non-inferior image quality with up to 50% reduction in count density, achieved by either imaging at ½ the acquisition time or injecting with ½ the dose (or any combination of the two) when compared to standard MPI protocols. The Evolution for Cardiac reconstruction is an additional module within the Myovation application.
The Evolution Tool Kit Camera License enables the acquisition of Evolution Tool Kit data sets on the 800 series cameras. The Evolution Tool Kit is a package enabling improved resolution and reduced noise for SPECT studies of Tc99m, I123, In111 and Ga67 by using the Evolution reconstruction technique with resolution recovery. Compared to standard FBP or iterative

reconstruction, Evolution Tool Kit can enable improved visual clarity. Evolution Tool Kit includes Poisson and Angular re-sampling tools to for imaging simulation of various levels of count densities to test the impact of time or dose reduction on image quality. Evolution Tool Kit reconstruction is an additional module within the Q.Volumetrix MI application.

Line	Qty.	Catalog	
3	1.00	H3909AD	**NM LEHRS coll with cart (including SwiftScan)**

NM 800 Low Energy High Resolution and sensitivity Collimators includes two collimators and a dedicated collimator cart.

Line	Qty.	Catalog	
4	1.00	H2506TC	**NM MEGP Collimators with Cart**

NM Medium Energy General Purpose Collimators includes two collimators and a dedicated collimator cart

Line	Qty.	Catalog	
5	1.00	H3100PF	**QC Flood Source Holder Kit**

A large plate mounted at a small distance above the NM detector on which the flood source is positioned in order to perform acquisition of flood studies for QA/QC purposes.

Line	Qty.	Catalog	
6	1.00	H3100PE	**QC Point Source Holder**

An L-shaped metal plate attachable to the wall with an opening for a syringe in order to acquire point source-based flood acquisition at a few meters distance from vertically positioned detector for QA purposes.

Line	Qty.	Catalog	
7	1.00	H3602SL	**QA COR Source Holder**

Center of rotation source holder for Quality assurance, easily attached to Infinia or Ventri table.

Line	Qty.	Catalog	
8	1.00	H3909DY	**QC Bar Phantom**

Bar phantom for spatial resolution and linearity tests of gamma cameras. The phantom consists of four quadrants with different bar specification:
For each of the quadrant, bar spacing is 2.5mm, 3.2mm, 3.5mm 4.0mm

Line	Qty.	Catalog	
9	1.00	H3100YT	**UPS fixtures for 480V UPS for NM SPECT/CT**

A set of cables and components required for use with E4502JJ Eaton 6 kVa UPS - for DLX and DX Digital X-Ray system consoles and Nuclear products that provide partial emergency backup power supply for completion of NM scans and gantry motion.

Line	Qty.	Catalog	
10	1.00	H3100NW	**Axial Head Holder**

Ergonomically designed holder to position patient's head outside of the patient tabletop pallet, enabling brain SPECT orbiting as close as possible to the patient's skull with maximal coverage of the target tissue

Line	Qty.	Catalog	
11	1.00	H3100NP	Straps & Pads kit

Long table pad and straps

Line	Qty.	Catalog	
12	1.00	H3100TZ	Flat Floor Plate

A streamlined floor plate designed to facilitate collimator exchange on the NM 600/800 series cameras to aid hospital bed and stretcher imaging.

Line	Qty.	Catalog	
13	1.00	H3100PG	600/800 Series Pallet Extender

The patient pallet extender for NM 600/800 Series products can be used to extend the table top for multi-FOV SPECT, SPECT/CT and whole body studies to take advantage of the full scan range capabilities. Length is 600mm; Width is 391mm; 300mm extension Note - The use of the extender requires more space between the camera and the back wall of the scan room. Consult with GE Healthcare project manager for minimum room size requirements.

Line	Qty.	Catalog	
14	1.00	H2506KR	NORAV Integrated ECG Gating

NORAV ECG GATING

A compact ECG gating device for Discovery 630 gated cardiac studies, embedded in the Patient table in order to simplify operation.

Line	Qty.	Catalog	
15	1.00	H2506TR	600/800 Series Detector Removal

Detector dismount for shipment of system without detectors attached, must be reassembled in final location

Line	Qty.	Catalog	
16	1.00	B73602CA	Brivo CT Gantry Dolly

Dolly dedicated to Brivo CT

Line	Qty.	Catalog	
17	1.00	H2506TO	Q.METRIX CAMERA LICENSE

Q.Metrix enables employment of SPECT and CT segmentation tools for quantifying radiopharmaceutical uptake using patient demographics information.

Line	Qty.	Catalog	
18	1.00	S3906AX	Q.SPECT camera license

S3906AX Includes the Q.SPECT camera license functionality on GE SPECT/CT Scanners. In addition to tagging camera data to be used in Xeleris quantitation applications, this license enables functionality used with Smart Console.

Line	Qty.	Catalog	
19	1.00	R12023AC	Standard Service License

GE Healthcare has reclassified its service tools, diagnostics and documentation into various classes (please refer to the Service Licensing Notification statement at the beginning of this Quotation). The Standard License provides access to service tools used to perform basic level service on the Equipment and is included at no charge for the warranty period.

Line	Qty.	Catalog	
20	1.00	E4502JJ	**6 KVA UPS for Nuclear Medicine**

NOTES:
• Customer is responsible for rigging and arranging for installation with a qualified party
• ITEM IS NON-RETURNABLE AND NON-REFUNDABLE
• Removal/disposal of the old unit is the customer's responsibility.
FEATURES/BENEFITS
• The use of uninterruptible power enables the system imaging to be completed after the loss of supply power, and allows for saving of valuable data and orderly system shutdown
• The Online Double Conversion UPS eliminates all power anomalies such as noise, transients, overvoltage and undervoltage, which could damage the imaging system's sensitive computer components
• Improves imaging system reliability, reduces service costs, and increases system uptime
• Cell Saver Technology provides conditioned power even during severe brownout conditions without depleting battery resources
• System monitoring via: LanSafe III / FailSafe III software, (2) RS-232 Ports
• PowerPass Module further enhances reliability through Maintenance Bypass Switch which performs maintenance or upgrade your UPS without powering down your critical systems

SPECIFICATIONS
• Dimensions (H x W x D): 33.6" x 9.9" x 15.8"
• Weight: 218 lbs.
• Input Voltage: 200 - 240 VAC
• Output Voltage: 120/240, 120/208 VAC
• Frequency: 45-65 Hz

COMPATIBILITY
• Maxxus NM

Line	Qty.	Catalog	
21	1.00	E4502AG	**90A A1 Main Disconnect Panel and UPS Control**

NOTES:
• Customer is responsible for arranging for installation with a qualified party
• ITEM IS NON-RETURNABLE AND NON-REFUNDABLE

Line	Qty.	Catalog	
22	1.00	E8500NB	**Patient Arm Support System for Nuclear, PET/CT, MRI**

Padded Arm Rest combines total arm support and passive restraint, increasing patient comfort during extended procedures. Designed to accommodate virtually all patients. Compatible with most Nuclear Imaging systems and can also be used in MRI, CT and PET applications. Constructed with a comfortable, full support polyfoam with a seamless coated finish. Warranty Code: H

Line	Qty.	Catalog	
23	1.00	E8500NC	**Patient Leg Rest for Nuclear, PET/CT, MRI**

Contoured Leg Rest prevents low back stress and pain that occurs during supine imaging and treatment, measures 7 in. H x 17 in. D x 13 in. W. Designed to accommodate virtually all patients. Compatible with most Nuclear Imaging systems and can also be used in MRI, CT and PET applications. Constructed with a comfortable, full support polyfoam with a seamless coated finish. Warranty Code: H

Line	Qty.	Catalog	
24	1.00	W0302NM	**TIP SPECT/CT System Training Program**
			This training program is designed for customers purchasing a GEHC SPECT/CT system.

This training program is designed for customers purchasing a GEHC SPECT/CT system. GEHC will work with the designated Customer contact to agree upon a reasonable training schedule for a pre-defined group of core technologists that will leverage blended content delivery and may include a combination of onsite days and virtual offerings, to include TiP Virtual Assist, the GEHC Answerline and available on-demand courses ("Virtual Inclusions"). This blended curriculum with multiple delivery platforms promotes learner retention and allows for an efficient and effective skill development.

This program may contain:
- Onsite training (generally 12 days)
- Virtual Inclusions may include:
- Remote instructor-led training: Instructor leads a remote training session one-on-one or in a group, typically for 1 hour
- Answerline Support-Access to GEHC experts for clinical, non-emergency applications assistance via phone or by using the iLinq button on the imaging console
- Tip Virtual Assist-Direct interactive access to a GEHC expert for enhanced support.
- On Demand courses-On healthcare learning system. Self-paced courses and webinars (CE and non-CE).

Training will be delivered at a mutually agreed upon time between the customer and GE Healthcare (excluding GE Healthcare holidays and weekends), are subject to availability and generally will not exceed 17 days.This training program has a term of twelve (12) months commencing on Acceptance, where all onsite training must be scheduled and completed within twelve (12) months of Acceptance and all Virtual Inclusions also expire at the end of such twelve (12) month period. Additional onsite days may be available for purchase separately.

All GEHC "Training" terms and conditions apply. Given the unique nature of this program, if this program is purchased as part of a purchase under a Governing Agreement, including any Master Purchase Agreement, Group Purchasing Organization Agreement, or Strategic Alliance Agreement, this program shall take precedence over any conflicting training deliverables set forth therein.

Line	Qty.	Catalog	
25	1.00	H3905RE	**Xeleris V Workstation Full**

Xeleris™ V Workstation is a molecular imaging processing, analysis, and review solution for molecular imaging (Nuclear Medicine, PET, NM/CT, and PET/CT), Xeleris V is a Single User Workstation solution that transforms the way nuclear medicine works. Designed to leverage the latest SPECT quantitative applications for routine clinical use, and including new AI- Powered clinical applications, it accelerates workflow and improves diagnostic confidence.

Line	Qty.	Catalog	
26	1.00	H3905GY	**Xeleris V Q.Volumetrix**

Q.Volumetrix AI
Optional software for Volumetrix MI that enables advanced segmentation empowered AI and quantitation capabilities for SPECT/CT and PET/CT data. Enables routine quantitative SPECT results in the form of MBq/ml and SPECT SUV (Standard Uptake Value) without workflow impediments for both base line and longitudinal studies, especially where relative quantitation is insufficient Utilizes advanced quantitative reconstruction with compensation for Attenuation, Resolution and Scatter. Patient demographics and dose information are incorporated to provide accurate quantitative results. Quantitative SPECT/PET results are further enhanced with advanced segmentation tools providing 2D and 3D organ and lesion characterization. The Q.Volumetrix AI option provides quantitative patient follow-up.
Supports data from GE Healthcare 600's Hybrid products using the following isotopes: 99mTc, 201Tl, 111,In, 123I, 131I, 67Ga, Lu177 and collimators: NaI: LEHRS, LEHR, LEHS, ELEGP, MEGP, HEGP, CZT: WEHR, MEHRS

Line	Qty.	Catalog	
27	1.00	H3905MP	**Xeleris V Cedars SPECT Deluxe for WS**

Xeleris V Workstation Cedars SPECT Deluxe - single user

Line	Qty.	Catalog	
28	1.00	NI_NUC_I NSTALLA TION	$5000 is applied to 3rd-Party Rigging Services, as directed by Customer. Rigging (including excess/additional rigging costs) remains the Customer's responsibility. Unapplied rigging funds will be forfeited without refund or credit.

Rigging, De-installation, Installation Charges. No construction should be placed in this category

Total Quote Subtotal:	**$644,670.87**
Total Quote Net Selling Price:	***$644,670.87***

If applicable, for more information on this devices' operating system, please visit GE Healthcare's product security portal at:
https://securityupdate.gehealthcare.com/en/products

Optional Items

Please initial the Catalogs you wish to purchase

Catalog Number	Qty.	Description	Net Price	Initial
H3909CX	**1.00**	**Pinhole & LEHR Collimator Cart**	**$14,400.00**	_____

A collimator cart with Pinhole collimator (Detector #1) and LEHR collimator (Detector #2)

For successive Thyroid / Parathyroid acquisitions without the need to change collimators between scans.

Catalog Number	Qty.	Description	Net Price	Initial
H3905AP	**1.00**	**Xeleris V Q.Lung AI**	**$22,000.00**	_____

Q.Lung AI provides diagnosis of Pulmonary Embolism (PE), Chronic Obstructive Pulmonary Disease (COPD), Emphysema and other lung deficiencies.
Assess the fraction of total lung function provided by a lobe or whole lung for Lung cancer resection requiring removal of an entire lobe, bilobectomy or pneumonectomy.
Q.Lung AI introduces lung lobe segmentation based on CT structures, using Deep Learning technology for lung fissure automatic detection.

Catalog Number	Qty.	Description	Net Price	Initial
H3905EH	**1.00**	**Xeleris V Q.Liver**	**$22,000.00**	_____

Q.Liver is a comprehensive application that provides processing, quantification, and multidimensional review of Liver SPECT/PET and CT for display and segmentation. The application provides the user with tools to calculate a therapeutic dose for Selective Internal Radiation Therapy (SIRT) treatment.

GE Healthcare

GPO Agreement Reference Information

Customer:	East Carolina Health Chowan, Inc. d/b/a ECU Health Chowan Hospital
Contract Number:	Vizient Q4-2022 Group Buy Pricing
Billing Terms:	80% on Delivery / 20% on Acceptance
Payment Terms:	45 Net
Shipping Terms	FOB DESTINATION

Offer subject to the Terms and Conditions of the applicable Group Purchasing Agreements currently in effect between GE Healthcare and Vizient Q4-2022 Group Buy Pricing

If applicable, for more information on this devices' operating system, please visit GE Healthcare's product security portal at:
https://securityupdate.gehealthcare.com/en/products

Appendix D

Equipment Brochure

800 Series and Key Solutions

GE Nuclear Medicine 800

The Global Nuclear Medicine Market Is Expected to Reach $15.2 Billion by 2025[a]

The global nuclear medicine market size was valued at $6 billion in 2019 and is expected to exhibit a growth of **10.1% per year** between 2018-2025[a].

Are you ready?

Nuclear Medicine Department Priorities

IMV NM Market Outlook Report[a]

1. Improve **patient satisfaction** with their NM experience.
2. Satisfy the needs of **referring physicians.**
3. Improve NM department workflow and **productivity.**
4. Keep SPECT & SPECT/CT cameras up-to-date with state-of-the-art **technology.**
5. Improve capability to reduce radiation **dose** to patients.

Helping drive strategic growth in your Nuclear Medicine department.

2036

You will still be using the camera you purchase today when this happens!

According to IMV, the average life of a gamma camera is **15 years** [a].

Imagine how your clinical needs will evolve over the next 15 years.

You are not just buying a camera for your needs today…but also for your needs 15 years in the future!

[A] According to 2018 Nuclear Medicine Outlook Report www.IMVinfo.com

So What Does the Future Look Like?

- Nuclear **theranostics** and targeted radiotherapies have emerged as a major clinical and research area of interest and development [8].

- To date, radionuclide therapies represent ~15% of the global nuclear medicine market…and is expected to reach **60%** by 2030 [8].

- According to the World Health Organization, the number of new cancer cases is expected to grow by ~**63%** over the next two decades. [11]

1 in 8 men will be diagnosed with prostate cancer [12]

Prostate cancer is the **2nd leading cause of cancer death** in men in the US [9]

ClinicalTrials.gov > 300 clinical trials on **PSMA for prostate and other cancers** [10]

Quantitative SPECT/CT can aid in diagnosis and monitoring therapy response

One MI Vision

Develop innovative technologies and cutting-edge applications that help the lives of patients

Expanded access

Accurate quantitation

Fully digital experience

Dose & time efficiency

Tracer development

Personalized medicine

Signa PET/MR

Discovery MI

NM/CT 870 CZT

GENtrace & FASTlab

Pharmaceuticals

The GE Legacy of MI Leadership

| 1970 | 1980 | 1990 | 1999 | 2000 | 2009 | 2012 | 2016 | 2019 | 2021 |

Anger Camera

Rotating Gantry

Dual Detectors

First SPECT/CT

First PET/CT

Ultra-Fast Cardiac

Molecular Breast Imaging

The first Digital SPECT and PET

Motion Free DMI and DIQ

360° array of CZT

Organs   Tissues   Cells   Molecules   Theragnostic
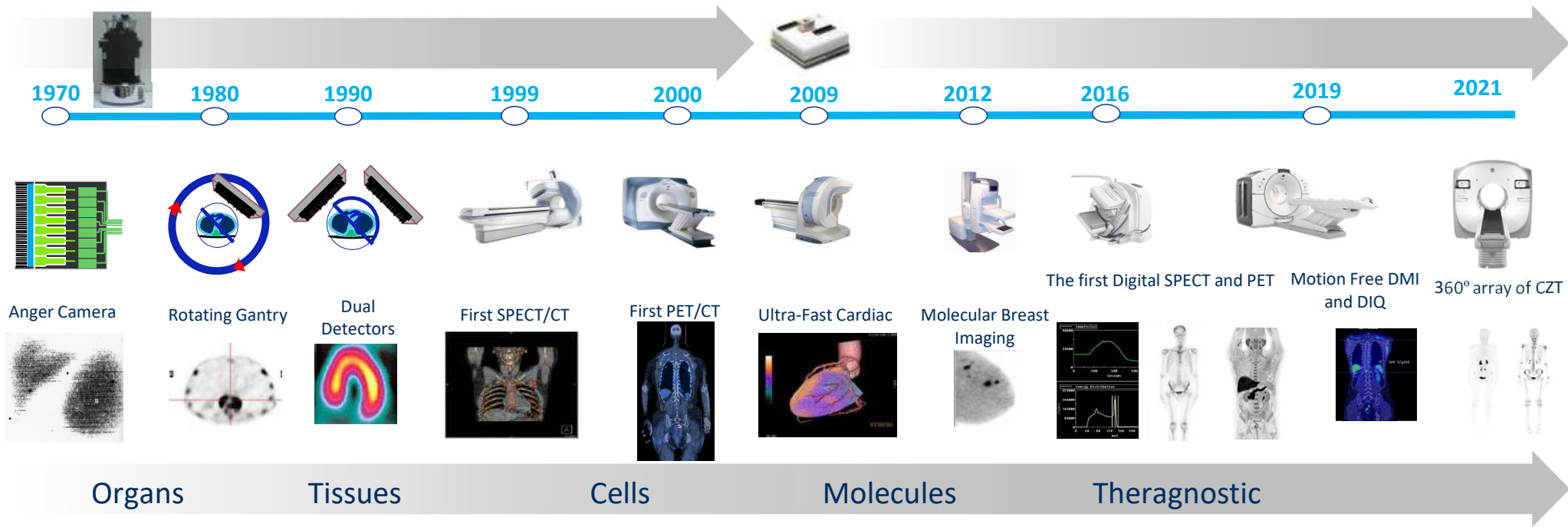
50 years of Nuclear Medicine Innovation

GE Healthcare has a Nuclear Medicine system to meet **YOUR** needs today…and in the future.

Your Priorities. Our Solutions.

Top Department Priorities	GE Differentiators							
	Evolution	SwiftScan	Touch Ruler	Ignite	Smart Console	Quant Apps	CZT	Current Gen CT
Improve patient satisfaction with their NM experience	✓	✓	✓	✓	✓		✓	
Satisfy the needs of referring physicians		✓			✓	✓	✓	✓
Improve NM department workflow and productivity	✓	✓	✓	✓	✓	✓	✓	✓
Keep cameras up-to-date with state-of-the-art technology	✓	✓	✓	✓	✓	✓	✓	✓
Improve capability to reduce radiation dose to patients [1,3]	✓	✓					✓	
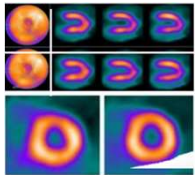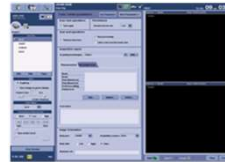
Evolution | SwiftScan | Touch Ruler | Ignite | SmartConsole | Quantitation | CZT | CT

Evolution

Patient Satisfaction. Productivity. Dose Reduction.
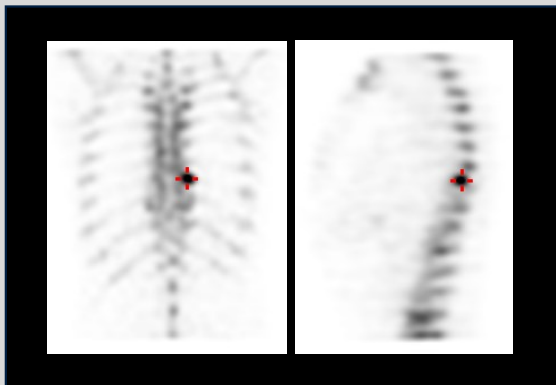
Evolution for Bone

- Half-time or half-dose with same image quality as conventional full-time or full-dose bone SPECT scans[3].
- Higher patient throughput.
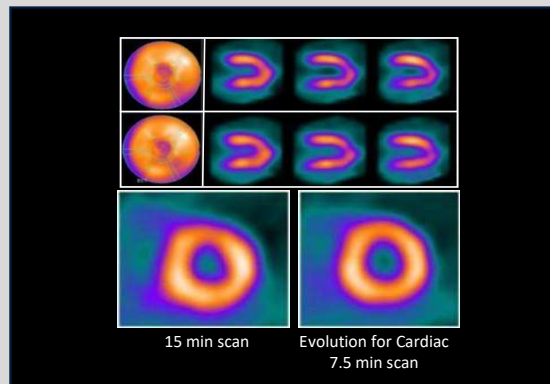
Evolution for Cardiac

- Half-time or half-dose with same image quality as conventional full-time or full-dose cardiac SPECT scans[3].
- May help minimize patient motion.
- Higher patient throughput.
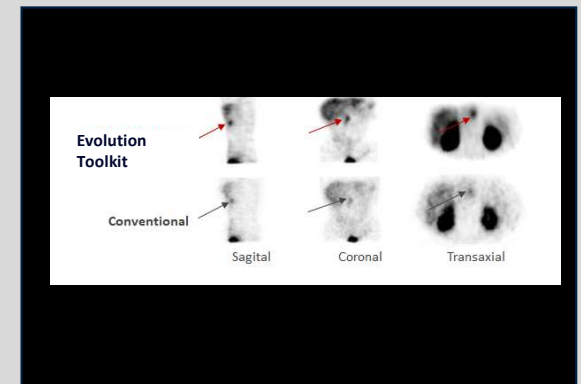
Evolution Toolkit

- High resolution and low noise in ^{99m}Tc, ^{123}I, ^{111}In, and ^{67}Ga SPECT studies.
- High visual clarity.
- Can be used to test IQ as function of counts using Poisson resampling tool.

Up to a 50% Reduction of Time or Dose[3]

SwiftScan Technology

Patient Satisfaction. Productivity. Dose Reduction.

LEHRS
Low Energy High Resolution and
Sensitivity Collimator
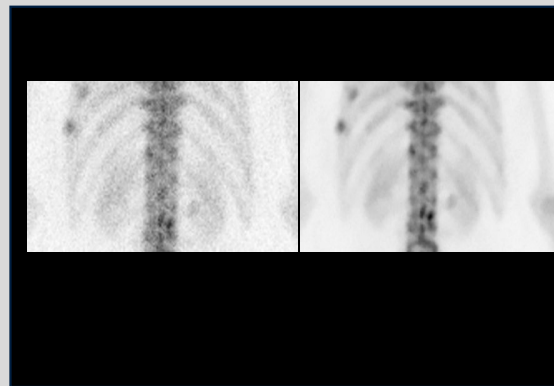
Clarity 2D Planar
Noise Reduction and
Contrast Enhancement
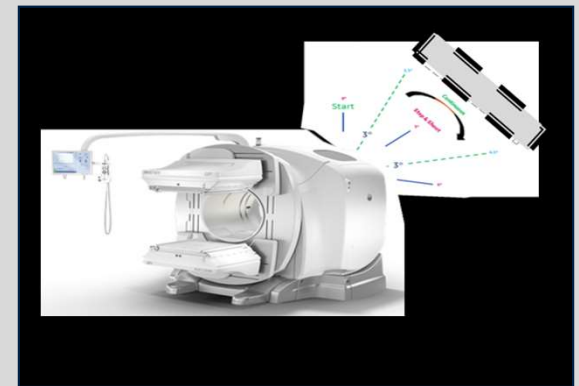
Step & Shoot Continuous
SPECT Acquisition Mode

- Scan more patients and improve patient comfort with up to a 25% reduction in imaging time or reduce injected dose by up to 25%[1].

- Improved small lesion detectability - important for visualizing lesions and metastases at earliest stages[2].

SwiftScan Clinical Performance
Reduced Imaging Time With Improved Lesion Detectability

SwiftScan Planar

15 min	15 min	11.25 min
CNR=17.6	CNR=25.46	CNR=20.40
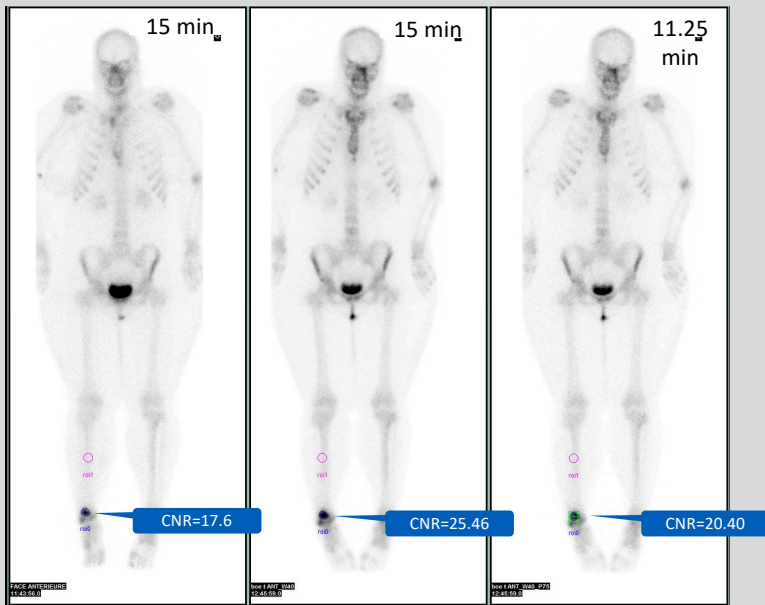
Non-GE System Planar
Full time

800 Series SwiftScan
Planar Full time

800 Series SwiftScan Planar
25% reduction

SwiftScan SPECT
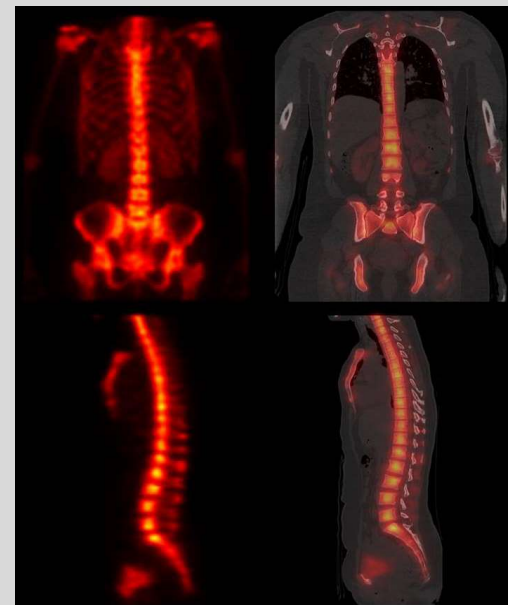
5.5 min/FOV Bone SPECT

SwiftScan SPECT + Evolution

Standard Imaging
18 minutes

Evolution
9 minutes

Evolution + SwiftScan
6.75 minutes

Images courtesy of The Miriam Hospital, Rhode Island, USA

SwiftScan SPECT + Evolution

Standard Imaging
Rest – 18 minutes
Stress – 13 minutes

Evolution
Rest – 9.0 minutes
Stress – 6.5 minutes

Evolution + SwiftScan
Rest – 6.75 minutes
Stress – 4.9 minutes
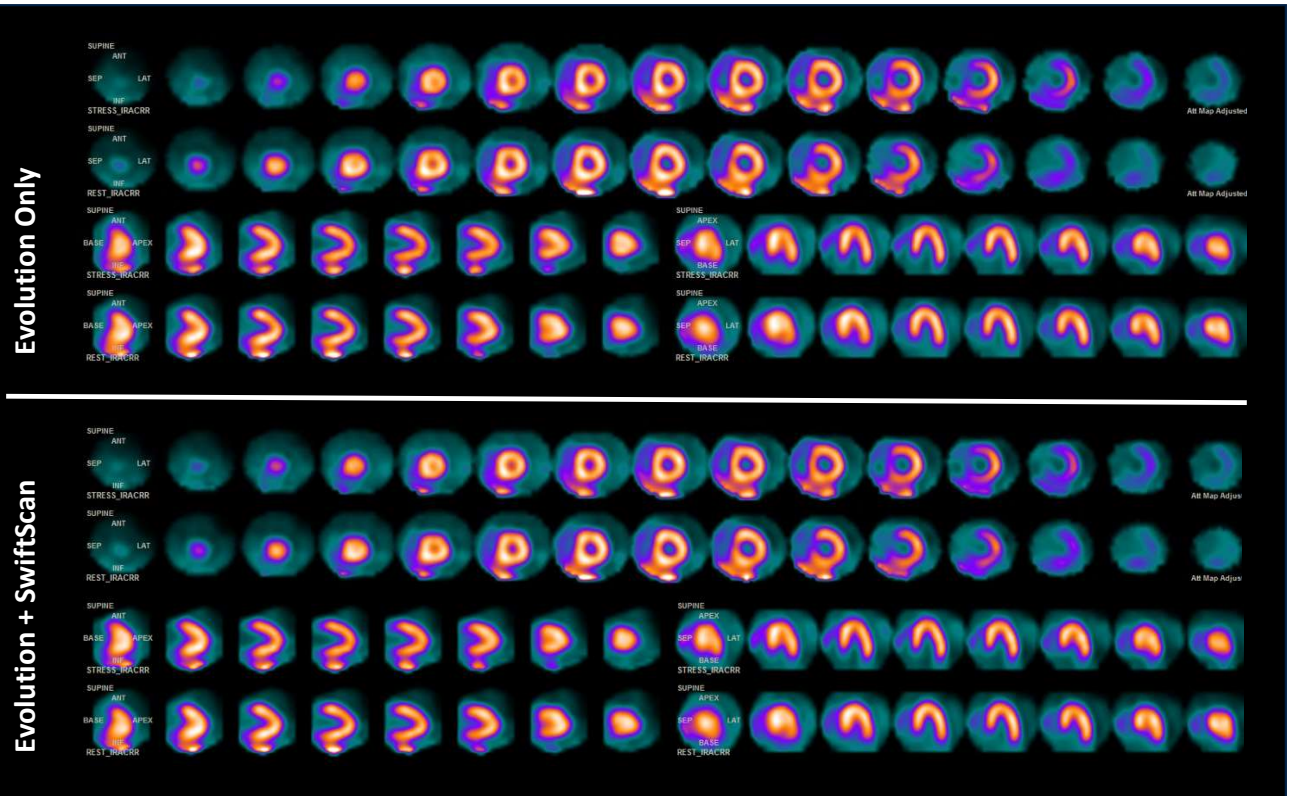
Images courtesy of The Miriam Hospital, Rhode Island, USA

SmartConsole
Changing the Way You Work

Enhanced Department Collaboration

- Real-time, online technologist/physician collaboration.
- Scan planning while the patient is still on the table.

Simplified Workflow

- Automatic reconstruction
- Export results to any DICOM station

Improved access to data

- PET DICOM format
- Quantifiable results

* PET DICOM format images are provided as adjunct information to the original SPECT/CT images.

SmartConsole
Patient Satisfaction, Productivity

Simplified Workflow

- Enables real-time technologist/physician collaboration through an intuitive, web-based interface.

- Virtual image review while patient is still on the table.

- Allows the operator to plan the SPECT/CT FOV using acquired WB planar images.
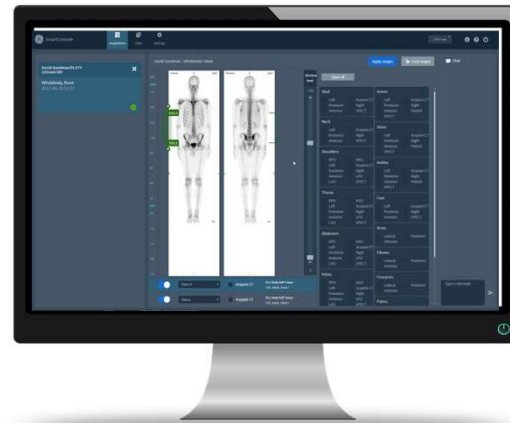
SmartConsole (Technologist)
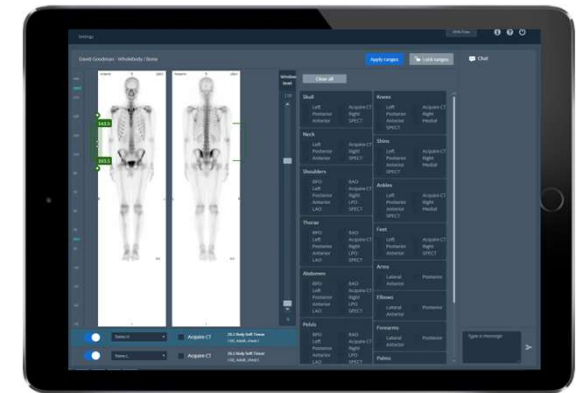
SmartConsole Web (Physician)

SmartConsole

Patient Satisfaction, Productivity

Auto Reconstruction

- Auto NM/CT registration
- Resolution recovery
- Attenuation correction
- Scatter correction
- Multi-FOV pasting
- Hybrid QC

Quantitation

- Auto-export results in PET DICOM format.
- Generate quantitative results on any DICOM workstation.

* PET DICOM format images are provided as adjunct information to the original SPECT/CT images.

SmartConsole Web
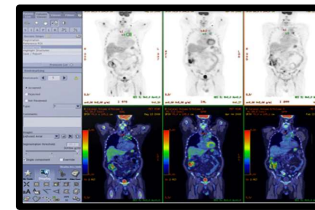
AW Apps

Xeleris 4DR
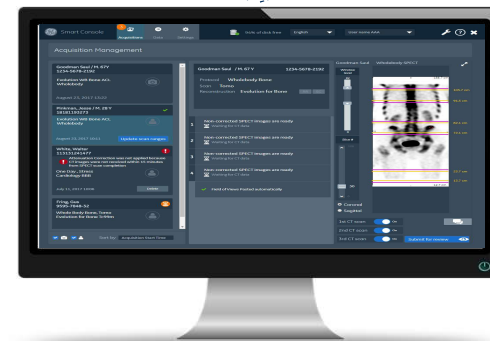
SmartConsole
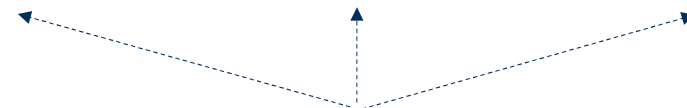
Touch Ruler & Ignite

Productivity

Interactive touch ruler

Set exact scan range and start scan from bedside

Ignite

Enhanced workflow with automatic processing
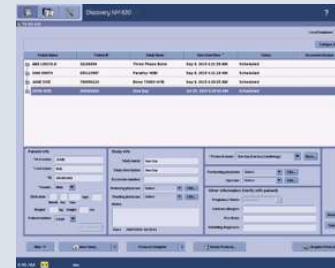
Worklist patient selection
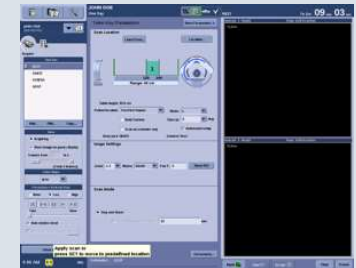
Auto-acquisition selection
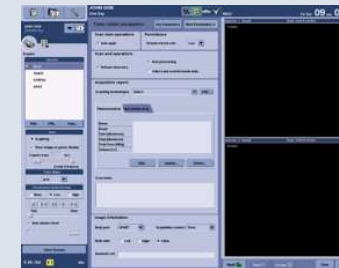
Auto-processing selection

Collimator Exchange & QC

Productivity

Semi-Automatic Collimator Exchange

- 2.5-minute on average guided collimator exchange.

- Easily share collimators between 600/800 series cameras.

- Ergonomically designed collimator carts are lightweight and easy to move.

Fast, Extrinsic Daily QC

- Simple, extrinsic daily floods.

- 5-10 minutes on average to complete using a Co57 sheet source.

- Includes source holder for single acquisition of both detectors.

Placeholder Slide

Additional SPECT Slides

The following section of 5 additional SPECT related slides are purposely hidden. They are not necessary for a quick overview. If you want to go a bit deeper into any of them, simply unhide any or all of them here.
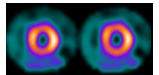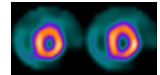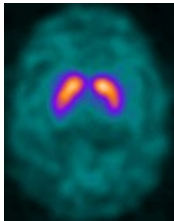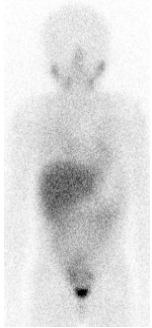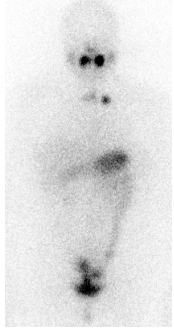
Low Energy High Resolution and Sensitivity (LEHRS) Collimator

	Structure & Dimensions	
Collimator Type	LEHR	LEHRS
Hole Pattern	Hexagonal	Hexagonal
Hole Diameter	1.50 mm	1.43 mm
Hole Length	35 mm	32 mm
Septal Thickness	0.20 mm	0.13 mm
	System Performance Specifications (3/8" crystal @ 10 cm)	
Sensitivity [7a]	160 cpm/µCi /72 cps/MBq	206 cpm/µCi /92 cps/MBq
Resolution [7b]	7.4 mm	7.4 mm (6.1 mm with Clarity 2D [7c])

A Collimator for Every Need

Isotope/Energy	^{99m}Tc 140 keV	^{99m}Tc 140 keV	^{99m}Tc 140 keV	^{123}I 159 keV	^{123}I 159 keV	^{123}I 159 keV	^{131}I 364 keV
Collimator	LEHR	LEHRS	LEUHR	LEHR/LEHRS	MEGP	ELEGP	HEGP
Example Application	bone, cardiac, renal, lung	bone, cardiac, renal, lung	bone	DaTscan	MIBG	MIBG, AdreView™	thyroid

■ CARDIAC ■ ONCOLOGY
■ OTHER ■ THYROID
■ PULMONARY ■ NEURO
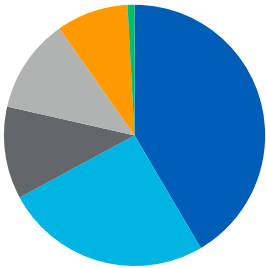
SPECT-Optimized Head Holder

The axial head holder is designed to position the patient's head outside the pallet, enabling detectors to be as close as possible to the patient's skull:

- Includes the entire patient brain in the FOV (even the cerebellum is inside the effective FOV)
- Keeps shoulders clear of the detector housing
- Includes a cut-out for optimal CT scan positioning
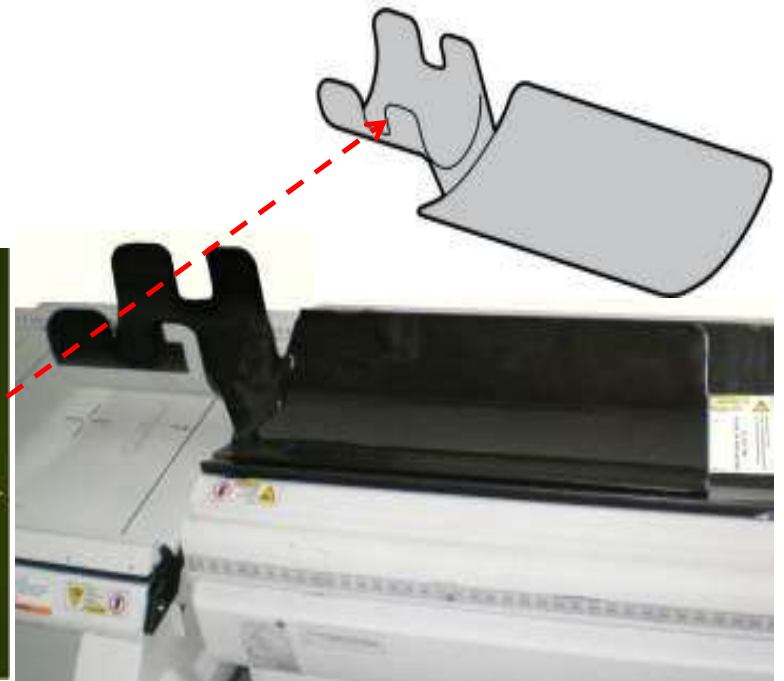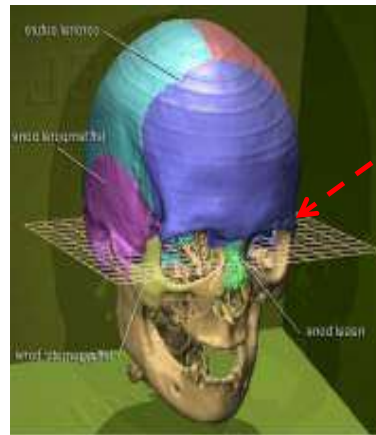
Pediatric Imaging
Positioning Accessories

Pediatric Positioner

- Position patients up to 3 years old using a smaller, more comfortable pallet.
- Used for all scan types.
- Simply place on top of the standard pallet.
- Designed to minimize patient motion with immobilization ensuring patient safety.

Infant Scan Support

- For patients up to 27.5 lb and 3.6 ft tall.
- Optimized for SPECT and SPECT/CT. imaging, with closer SPECT positioning around patient.
- Narrow pallet that slides along a rail mounted on a raised support on the patient table.

NM Dose Reports

Create DICOM screen captures for easy access to the injected dose information when reading from PACS or any other workstation.
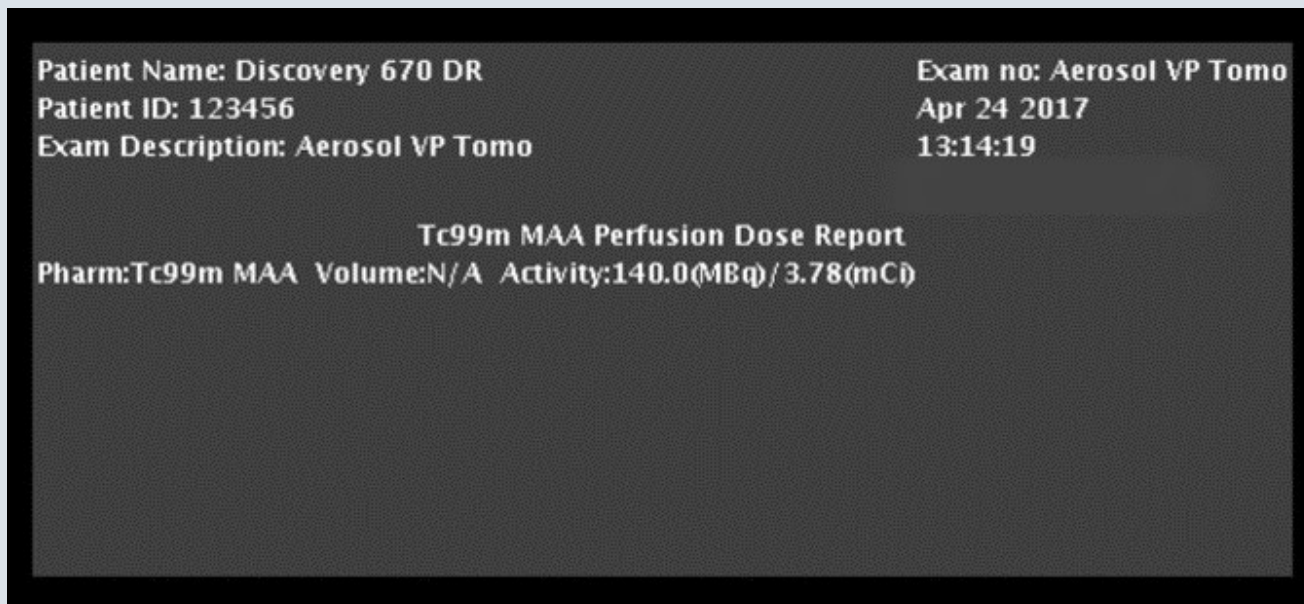
CZT

State-of-the-Art Technology, Dose Reduction, Productivity, Patient & Referring Physician Satisfaction

- Up to **75% reduction** in imaging time or injected dose[1].

- **Greater than 40% improvement** in SPECT contrast-to-noise ratio, an important factor in lesion detectability[5].

- **Improved spatial resolution** of 2.8 mm versus 4.3 mm*.

- **Improved energy resolution** of 6.3% versus 9.5% - enables simultaneous dual-isotope imaging.

68-year-old patient with prostate cancer. Image was acquired 4 hours post 179 mCi 177 Lu injection.
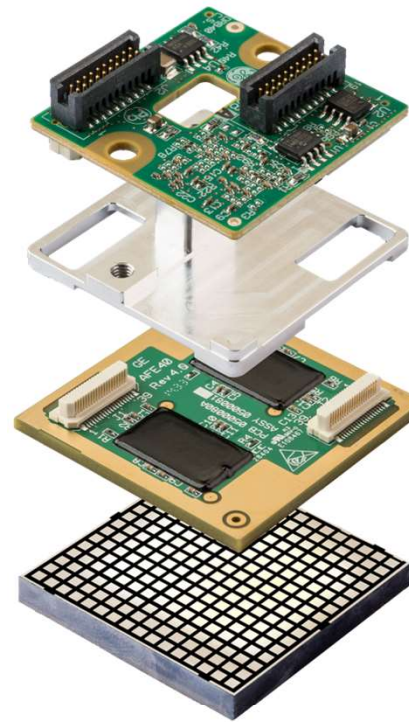
"CZT is a significant change in nuclear medicine, and we believe an improvement in technology."

Dr. Barry Siegel, Washington University Mallinkrodt Institute of Radiology at Barnes-Jewish Hospital, St. Louis, MO

*At detector surface with WEHR collimator

Nuclear Medicine Family

SPECT & SPECT/CT					3D SPECT/CT	Cardiac
NM 830	**NM/CT 850**	**NM/CT 860**	**NM/CT 870 DR**	**NM/CT 870 CZT**	**StarGuide**	**MyoSPECT**
• SPECT • LEHRS collimator • SwiftScan Planar • SwiftScan SPECT • Evolution • Touch Ruler • Auto-Processing	• SPECT/CT • LEHRS collimator • Revolution ACTs CT • 8-Slice low-dose CT for AC & Localization • 30 mA max • SmartConsole • SwiftScan	• SPECT/CT • LEHRS collimator • Revolution ACTs CT • 8-Slice CT • SmartConsole • SwiftScan • ASiR (Standard)	• SPECT/CT • LEHRS collimator • Optima 540 CT • 16/32-Slice CT* • SmartConsole • SwiftScan • ASiR & SmartMAR	• SPECT/CT • Digital detectors • Optima 540 CT • 16/32-Slice CT* • SmartConsole • SwiftScan • ASiR & SmartMAR	• SPECT/CT • 360° array CZT • Optical scout • Focused imaging • Optima 540 CT • 16/32-Slice CT* • SmartConsole • ASiR & SmartMAR	• Dedicated Cardiac • Digital detectors • Direct conversion • No motion • Focused collimation • Short scan times • Low dose

*32 slice with overlapped reconstruction option

SPECT/CT
What can it do for you?

- Expand your referral base.

- Enable change in your patient management.

- Increase diagnostic confidence.

- Expedite your interpretation and diagnosis.

- Prepare for challenging surgeries.

- Help in treatment planning or follow-up.
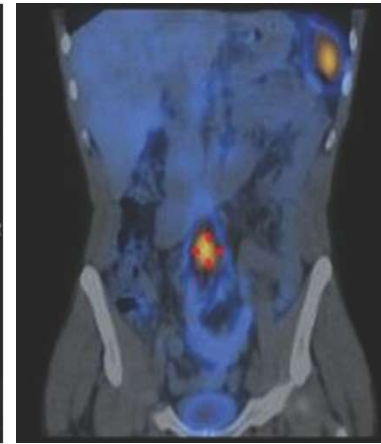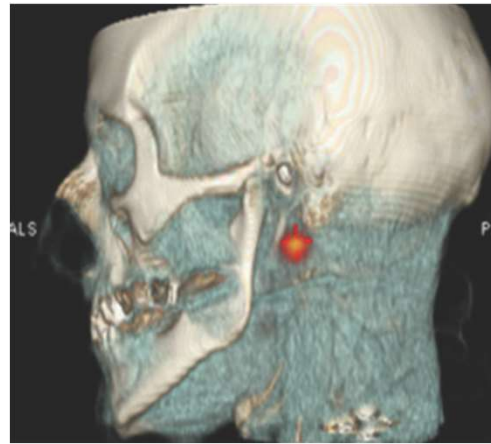
"Use of SPECT/CT over SPECT-only, resulted in treatment changes in **25-40%** of all our patients." [14]

Prof H Amthauer, MD Universitätsklinikum, Magdeburg, Germany

Why SPECT/CT? *Example Studies*
Patient Satisfaction, Satisfying Referring Physician

Increase Diagnostic Confidence

I123 thyroid cancer
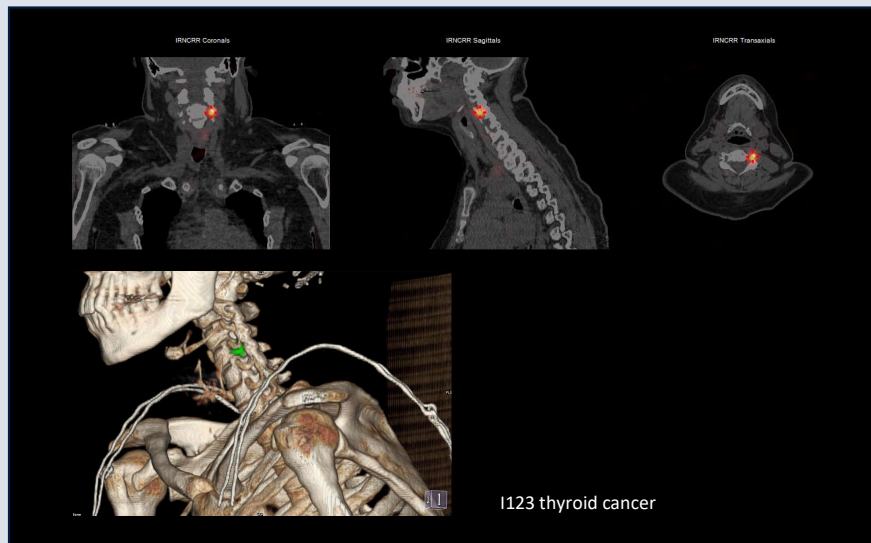
- Thyroid cancer post thyroidectomy.
- Multiple small foci of activity in the neck.
- Originally thought to be residual thyroid bed activity from the WB image.
- SPECT/CT was able to show the superior most focus to be a metastatic lesion.

Enable Change in Patient Management

Ga67- 48 hr. post injection
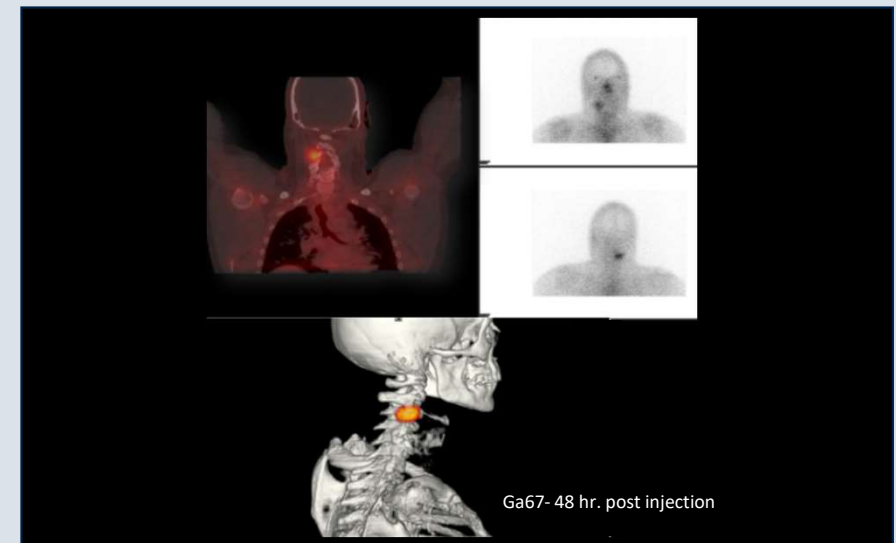
- Abnormal uptake at right upper cervical spine.
- SPECT/CT fusion imaging confirms abnormal uptake in the neck to be at the right C3 facet.
- Confirms osteomyelitis.

The example findings cited are limited to the referenced studies only and may not be broadly applicable to all clinical practice

Why SPECT/CT? *Example Studies*
Patient Satisfaction, Satisfying Referring Physician

Prepare for Challenging Surgeries

- History of questionable parathyroid vs thyroid adenoma.
- Increased uptake of hypo-attenuating nodule posterior to inferior lobe of left thyroid gland.
- Suggestive of parathyroid adenoma.
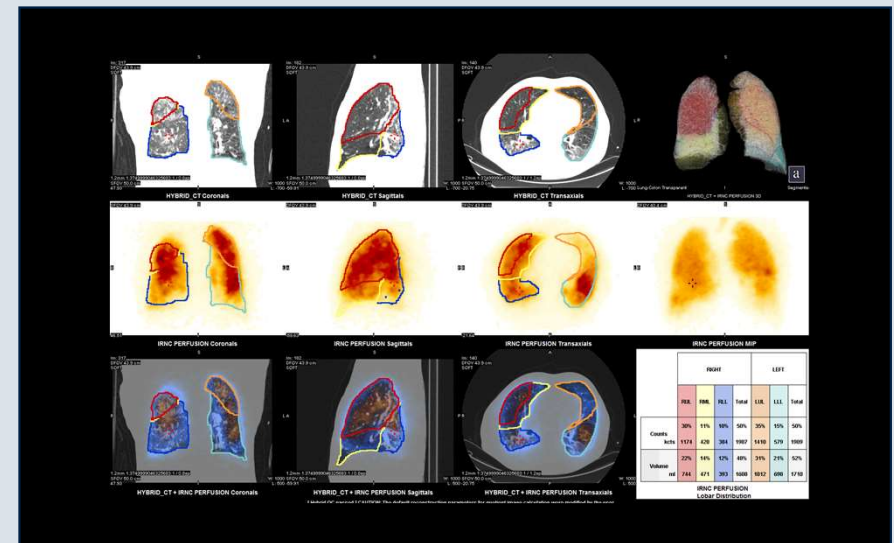
- Lung quantitation to evaluate predicted postoperative lung function.

Clinical Differentiation With SPECT/CT

Diagnostic CT, Sedation, Stand-alone CT

Contrast CT, PE, Single Breath-hold CT

Tissue Characterization

Routine Stand-alone CT

Accurate Localization

CT Anatomical Mapping

CT Attenuation Correction

NM/CT 850	NM/CT 860	NM/CT 870
8 Slice Low Dose	8 Slice High Resolution	16 Slice Diagnostic CT

- 10 mm axial coverage
- Recon 1.25, 2.5, 5, 10 mm
- 0.98s rotation
- Up to 30 mA
- 80, 100, 120, 140 kV
- 24 kW Generator

- 10 mm axial coverage
- Recon 0.625, 1.25, 2.5, 5, 10 mm
- 0.98s rotation
- Up to 200 mA
- 80, 100, 120, 140 kV
- ASiR to 333 mA
- 24 kW Generator

- 20 mm axial coverage
- Recon 0.625-10 mm
- 0.5s rotation
- Up to 440 mA
- 80, 100, 120, 140 kV
- AsiR*
- 32-slice overlapped recon*
- SmartMAR*
- 53 kW Generator

* Optional

Placeholder Slide

CT Options

The following section of 13 additional CT related slides are purposely hidden. They are not necessary for a quick overview. If you want to go a bit deeper into CT features, simply unhide any or all of them here.

ASiR[6]
Adaptive Statistical Iterative Reconstruction Algorithm

- A reconstruction technology that may enable reduction in pixel noise standard deviation.

- The ASiR reconstruction algorithm may allow for reduced mA in the acquisition of diagnostic images, thereby reducing the dose required.

- ASiR may enable improvement in low contrast detectability.
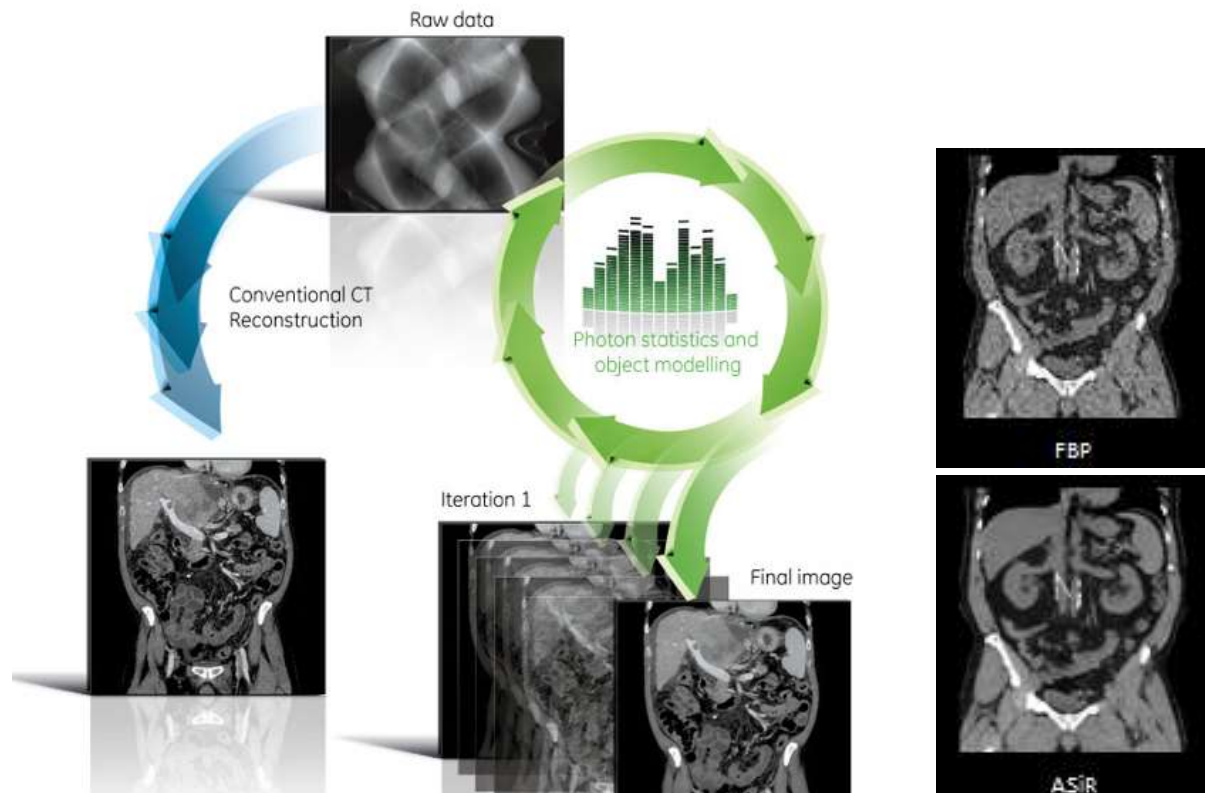
Smart MAR
Metal Artifact Reduction Technology

- Designed to help reduce photon starvation, beam hardening, and streak artifacts caused by metal in the body[13].
  - Hip implants
  - Clips
  - Screws
  - Dental fillings
- One acquisition
- No additional interaction required

Without Smart MAR
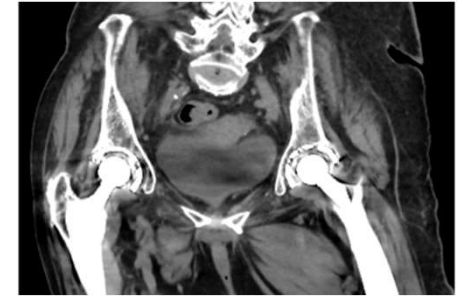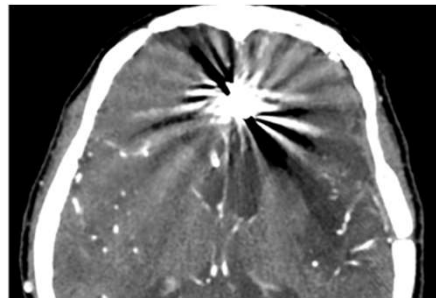
With Smart MAR

Without Smart MAR
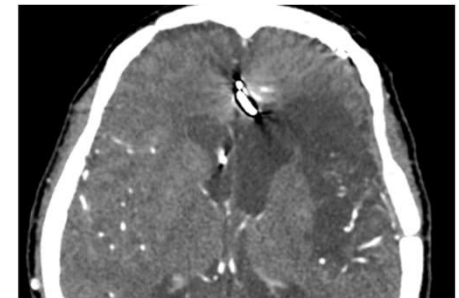
With Smart MAR

Smart MAR
Smart Metal Artifact Reduction (MAR)

Innovative technology that helps reduce photon starvation, beam hardening and streak artifacts[13].
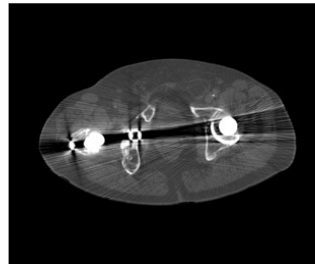
Original
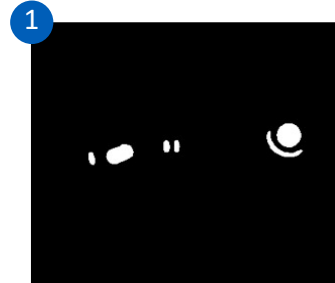
1

Identifies metal & generates metal mask
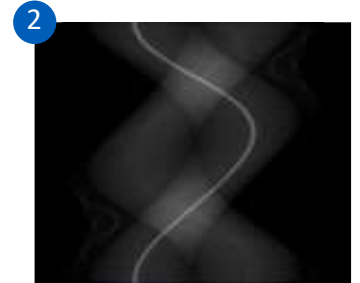
2

Removes metal from sinogram (raw data)
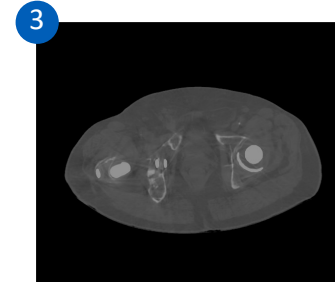
3

Reconstructs images without metal
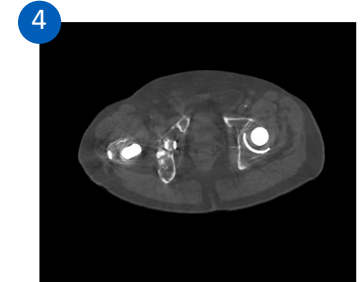
4

Blends new images with metal mask

Smart MAR
SPECT MOAB Infection
Part 1

NM/CT 870 CZT

SPECT

Total SwiftScan SPECT acquisition time = 8 min

128 matrix

Attenuation Correction Evolution

CT

120kV

29-36 mAs (modulated)

1.25 mm slices

0.9375:1 pitch

ASiR 60%
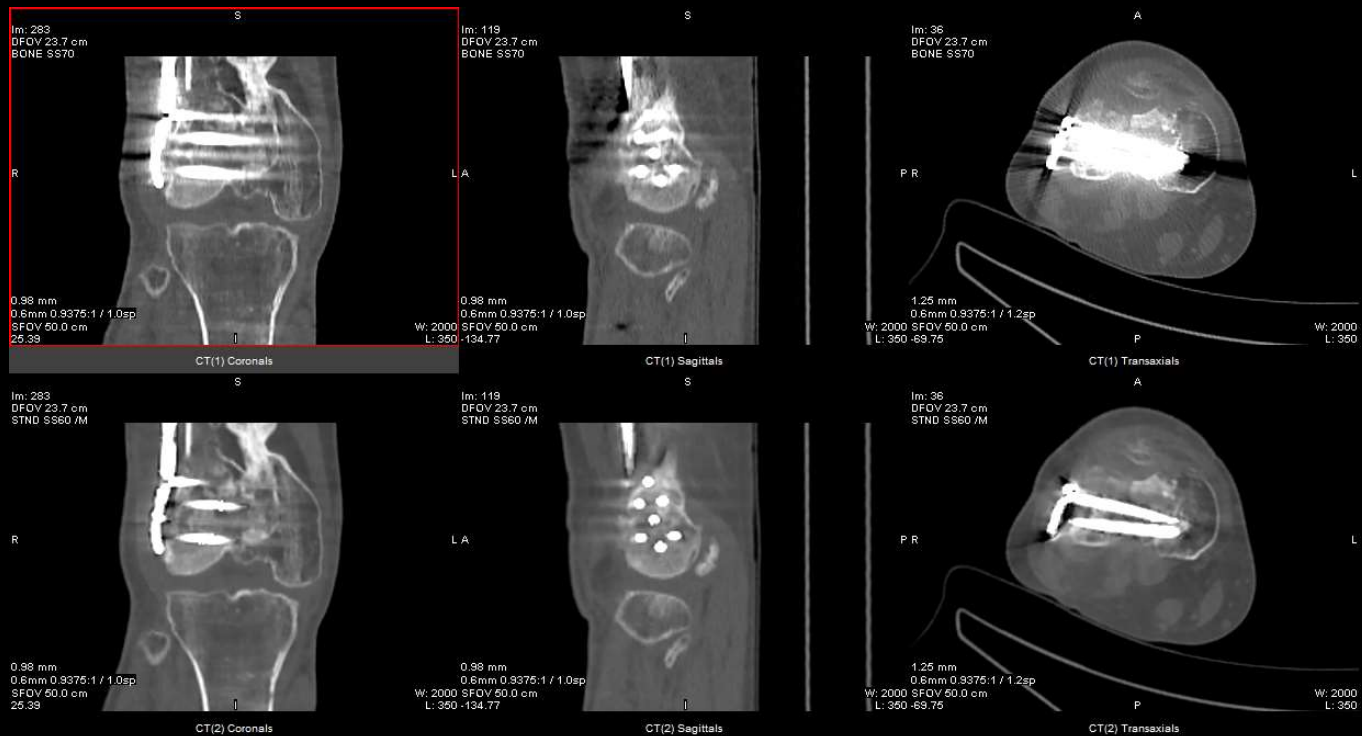
Without Smart MAR

With Smart MAR

Images courtesy of Prof. Kaufmann, University Hospital Zürich, Switzerland

Smart MAR
SPECT MOAB Infection
Part 2

NM/CT 870 CZT

SPECT
Total SwiftScan SPECT acquisition time = 8 min
128 matrix
Attenuation Correction
Evolution

CT
120kV
29-36 mAs (modulated)
1.25 mm slices
0,9375:1 pitch
ASiR 60%
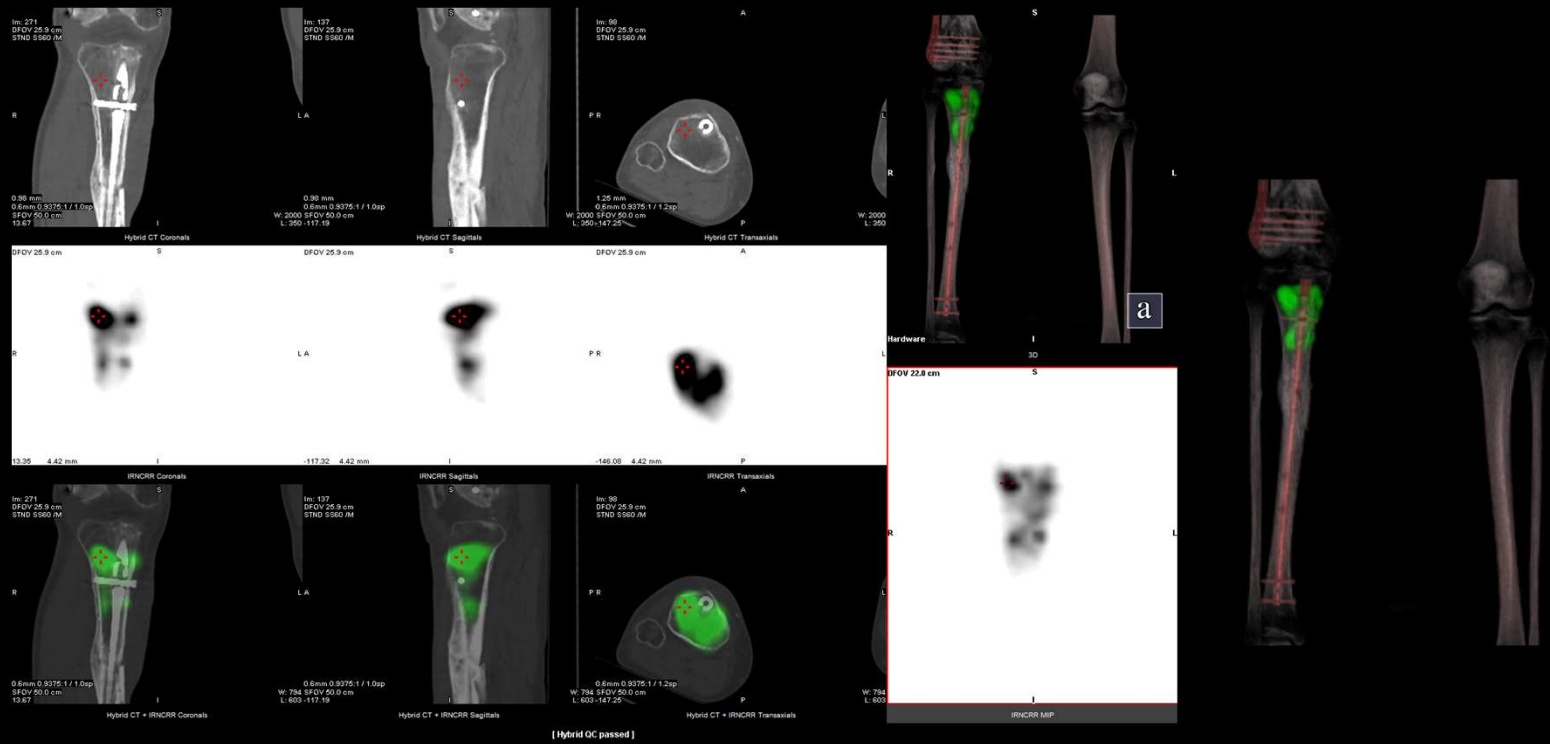
Images courtesy of Prof. Kaufmann, University Hospital Zürich, Switzerland

Q.AC
Ultra Low-dose CTAC Technology

- Q.AC* is a reconstruction algorithm which addresses Hounsfield Unit (HU) bias, which occurs in the reconstructed CT image when there is insufficient signal.
- This could be caused by too low current (mA) or too low voltage of the CT tube (kV).

Accurate AC is required mainly for 2 reasons:

- Overcoming attenuation artifacts
- Accurate quantitation

Phantom Tests

Standard recon	Standard recon	Standard recon
Low-dose CT scan	*ultra-low-dose CT scan*	*ultra-low-dose CT scan*
16 mAs/120 kVp	10 mAs/80 kVp	10 mAs /120 kVp
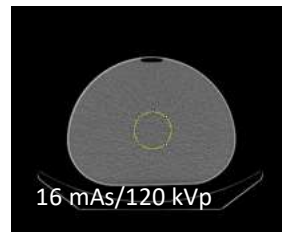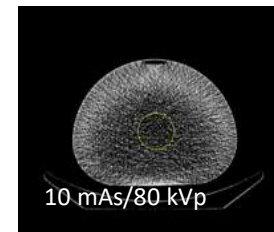
Q.AC   Q.AC

Q.AC recon   Q.AC recon
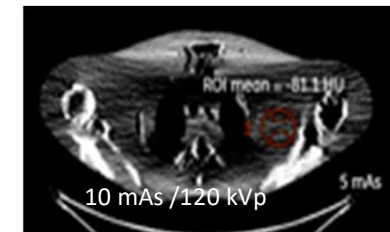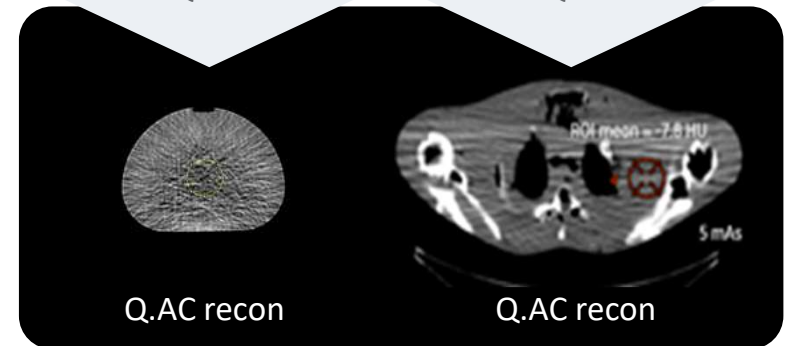
* Option available on select configuration only

WideView CT for AC

- WideView* enables attenuation correction for the entire SPECT FOV by extending the CT display field of view (DFOV) up to 70 cm in diameter.

- Removes CT clipping artifacts by completing truncated projections enabling attenuation correction throughout the entire SPECT FOV.

Your challenge:

- Density inside the CT FOV is distorted close to the truncated edges.

- Objects outside the CT FOV are clipped.

Our solution:

- Density inside the CT FOV is recovered.

- Objects outside the CT FOV are restored.
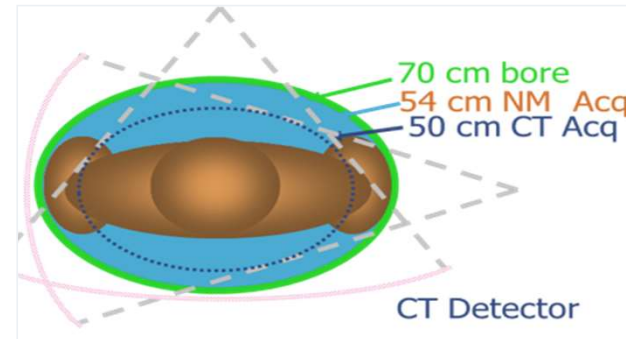
Conventional 50 cm FOV CT Recon
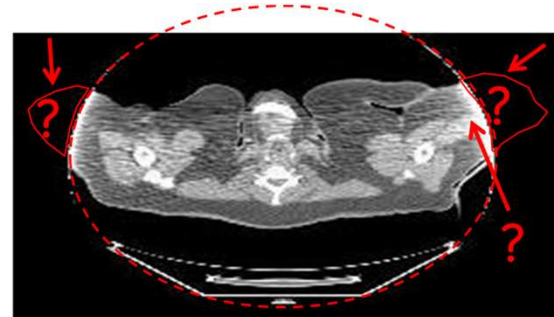
Without WideView
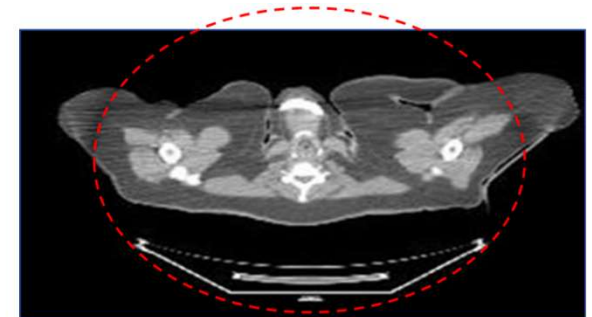
With WideView

* Option available on select configuration only

Smart Dose

3D Dose Modulation

3D Dose Modulation utilizing **SmartmA** automatic dose modulation and **AutomA**–allows you to personalize protocols and optimize dose for every patient–large and small.
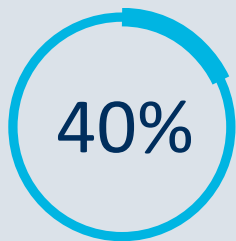
40% Average dose reduction

Before the scan, clinicians can select the desired Noise/IQ.

The CT will automatically tailor the exposure parameters and adjust in the X, Y, and Z axes in real-time.

3D dose modulation

From a single scout view

Constant dose — X

X, Y – changing mA within a slide — Y, X

Z – changing mA along patient — Z

3D mA modulation — XYZ

Decreasing Dose

- Auto mA varies mA in Z
- Smart mA varies mA in X/Y/Z
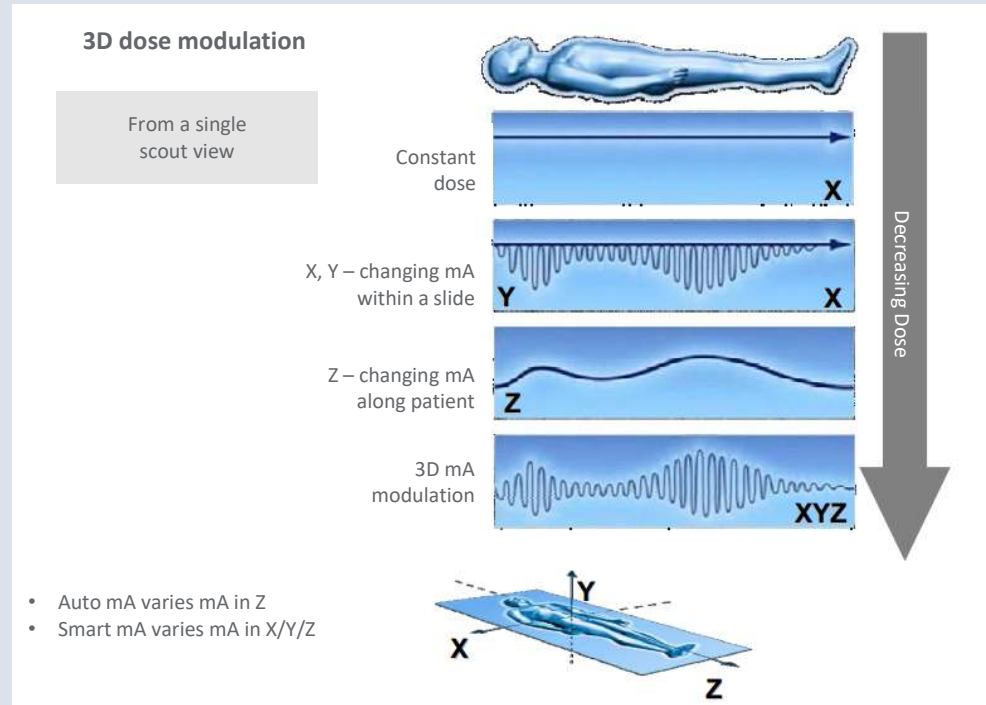
Smart Dose
Pediatric Protocols

- Color Coding Kids - color coded protocols for easy identification and selection of the proper protocol for every pediatric patient.

- Provides pediatric-scan protocols based on the Broselow-Luten Pediatric System*.

*Broselow-Luten Pediatric System is a registered trademark of Vital Signs, Inc.

32-Slice Overlapped Reconstruction

- Overlapped reconstruction enables 32-slices per rotation in **axial** scanning.
- Allows for high-resolution imaging.
- Delivering improved z-axis visualization relative to non-overlapped reconstruction with no additional dose to your patients.
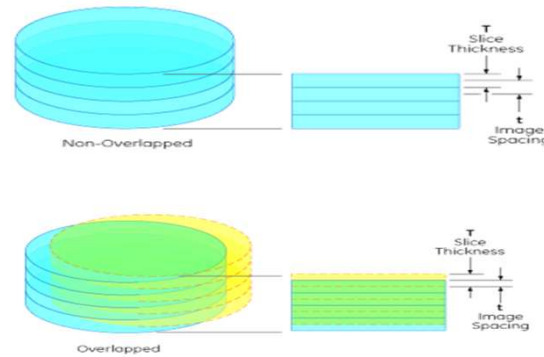
Non-overlapped 16-slice reconstruction
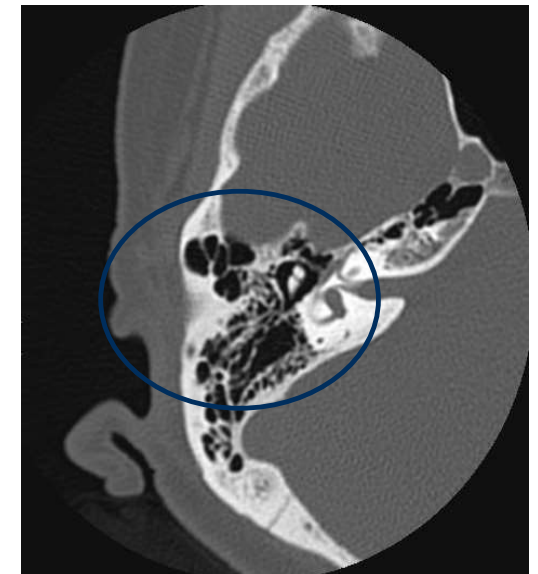
Overlapped 32-slice reconstruction

Ultra Kernel
NM/CT 870 DR & CZT

- Designed for better imaging of small anatomies.

- Adaptive Enhance Level Adjustment (AELA) can improve visual spatial resolution while maintaining pixel noise standard deviation and artifacts.

- This kernel may be helpful in enhancing the visualization of small anatomical structures with high contrast.
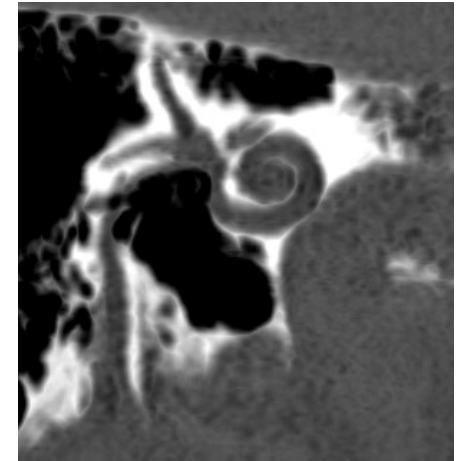
* Option available on select configuration only

IQE
Image Quality Enhancement

- 50-slice CT equivalent coverage speed*
- 3x the speed compared to a pitch of 0.562
- Less helical artifact than a pitch of 0.562

Without IQE
pitch 0.562

With IQE
pitch 1.75

13.7 s; 308 mm

13.7 s; 959 mm
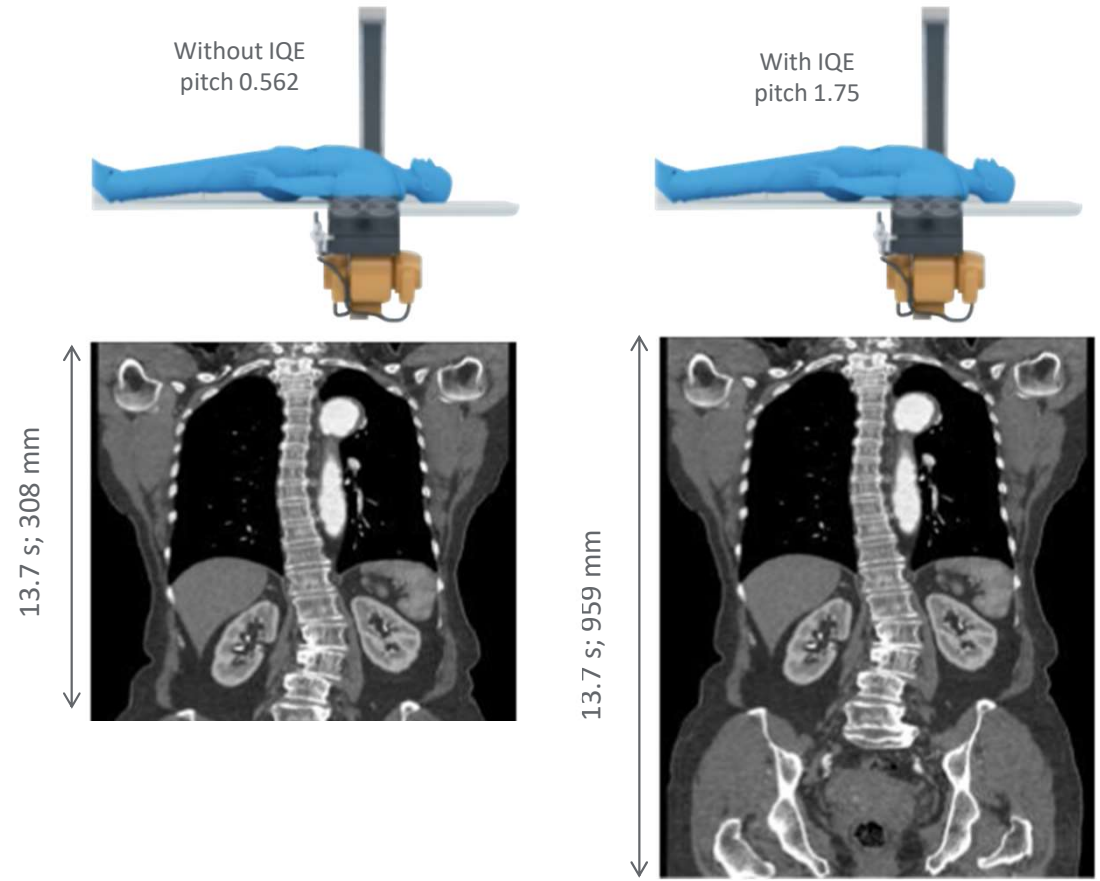
*At same table speed
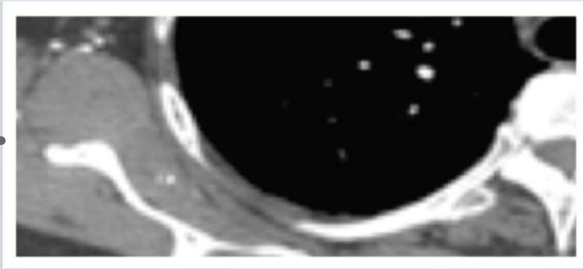
IQE

Effective Pinwheel Artifact Reduction
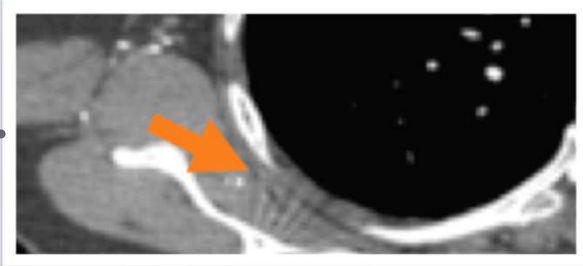
0.562 pitch

Good IQ, but long breath hold

1.5 pitch

Short breath hold, but more pinwheel artifact

Without IQE

1.75

pitch + IQE
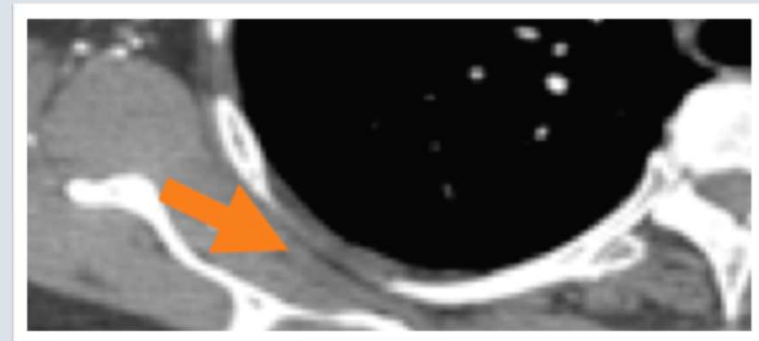
Short breath hold, artifact index less than 0.562

Unique to GE

Xeleris ™ 4 DR
Inform Your Decisions With Measurable Results

- Windows 10 operating system
- Enhanced security
- McAfee antivirus lifetime license
- 1000 GB database
- Virtually unlimited display screen resolution
- Supporting large screen displays

- Seamless connectivity throughout your department
- Dual-monitor support
- Server configurations available
- Full suite of quantitative applications

Xeleris V
The Next Generation

As a thin-client architecture with AI-based applications, Xeleris V is here to help meet the needs of multi-site/multi-users customers. Xeleris V is the latest generation of Xeleris workstations, bringing a virtual processing and review system for nuclear medicine with access to Smart Subscription, a subscription-based service for applications.

Together, Xeleris V and GE Healthcare's NM scanners are transforming the way nuclear medicine works to help you:

- Improve quality of care
- Deliver clinical impact
- Xeleris V combines the best of GE Healthcare's nuclear medicine technologies in one streamlined workstation

Xeleris Processing and Review System	Advanced Applications					Xeleris V: Smart Subscription	Xeleris V: Software Only
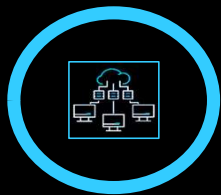
Xeleris V
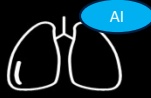
Q.Lung AI   Q.Liver   Cardiology Applications   EXINI Bone®   Q.Volumetrix AI
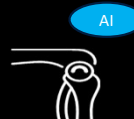
XELERIS V   XELERIS V

Why Quantitation Matters

Why

- Functional differences precede anatomical changes.
- Quantifying uptake may facilitate the assessment of disease progression.
- Early assessment of treatment response may improve clinical and economic outcomes.

What

- SIRT planning - Y90 Treatment
- Bone metastasis progression and prognosis
- Infectious diseases (soft tissue / bone)
- Ra^{223} treatment assessment
- NET treatment assessment
- Post therapy disease progression

Why Does Quantitation Matter?

The colors of Box A and Box B are different…right?

- Functional differences precede anatomical changes.

- Quantifying tracer uptake may facilitate the assessment of disease progression.

- Earlier assessment of treatment response has a potential to improve clinical and economic outcomes.

Edward H. Adelson[12]
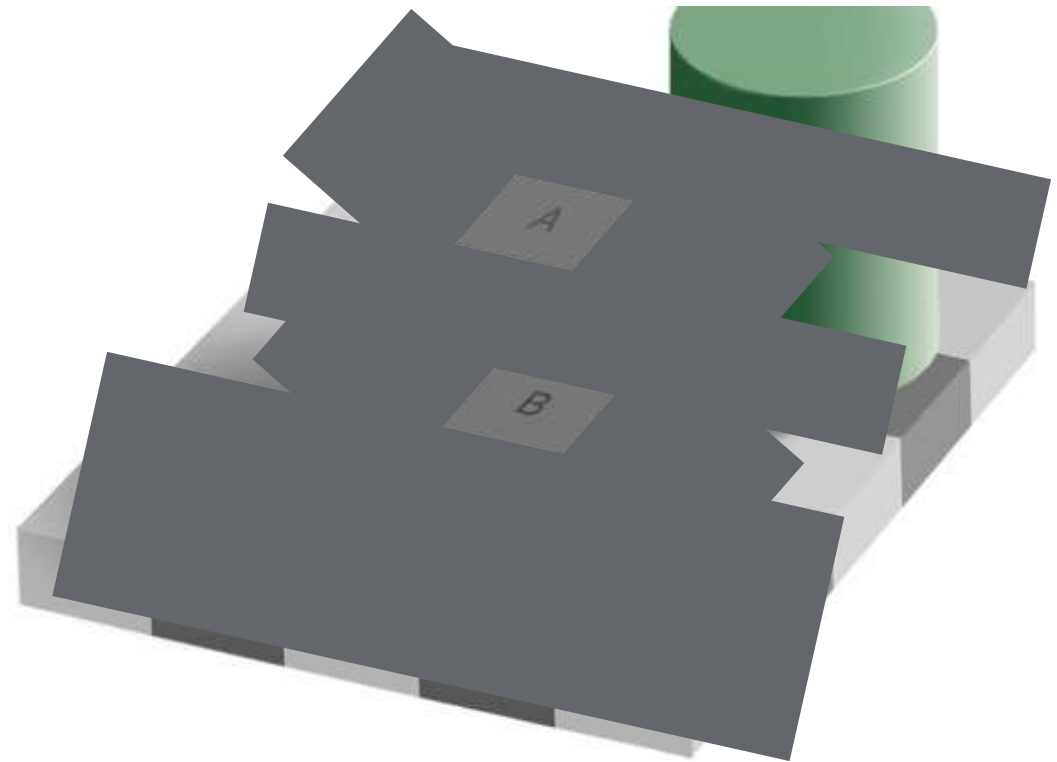
A New Era of Quantitative Applications

Q.Volumetrix MI

Calculate regional activity concentrations.

Automated segmentation providing 2D and 3D organ and lesion characterization for baseline and longitudinal studies.

DaTQUANT

Evaluation and quantitation of DaTscan images.

May assist in detection of loss of dopaminergic neuron terminals in the striatum, correlated with Parkinson's disease.

Q.Lung

Diagnosis of PE, COPD, emphysema & other lung deficiencies.

Assess the fraction of total lung function by a lobe or whole lung for lung resection.

Q.Brain

Visualize and quantify relative changes in the brain's metabolic function or blood flow as a result from epileptic seizures, dementia, inflammation, TBI, etc.

Dosimetry Toolkit

Quantify changes in uptake over time & calculate residence time per organ for Radio-Isotope Treatment (RIT) planning.

The GE (insert NM 800 series specific camera name) offers you...

- Patient Satisfaction
- Referring Physician Satisfaction
- State-of-the-Art Technology
- Productivity and Efficiency
- Dose Management
- Wide Range of Clinical Procedures

So, are you ready?

"The future depends on what you do today."
— Mahatma Gandhi

800 Series Planar Statics
3 Minute

ACQUISITION

19.8mCi ^{99m}Tc-HDP
2 hours post injection
SwiftScan Planar
LEHRS collimator

HISTORY

Diffuse osteoarticular pain.
Inflammatory reaction involving joint structures.
Looking for inflammatory or degenerative pathology.

Outside R – inner L   Outside L – inner R

anterior   posterior

Image Courtesy of Saint-Pierre University Hospital, Brussels, Belgium, Dr Garcia, Dr Tondeur
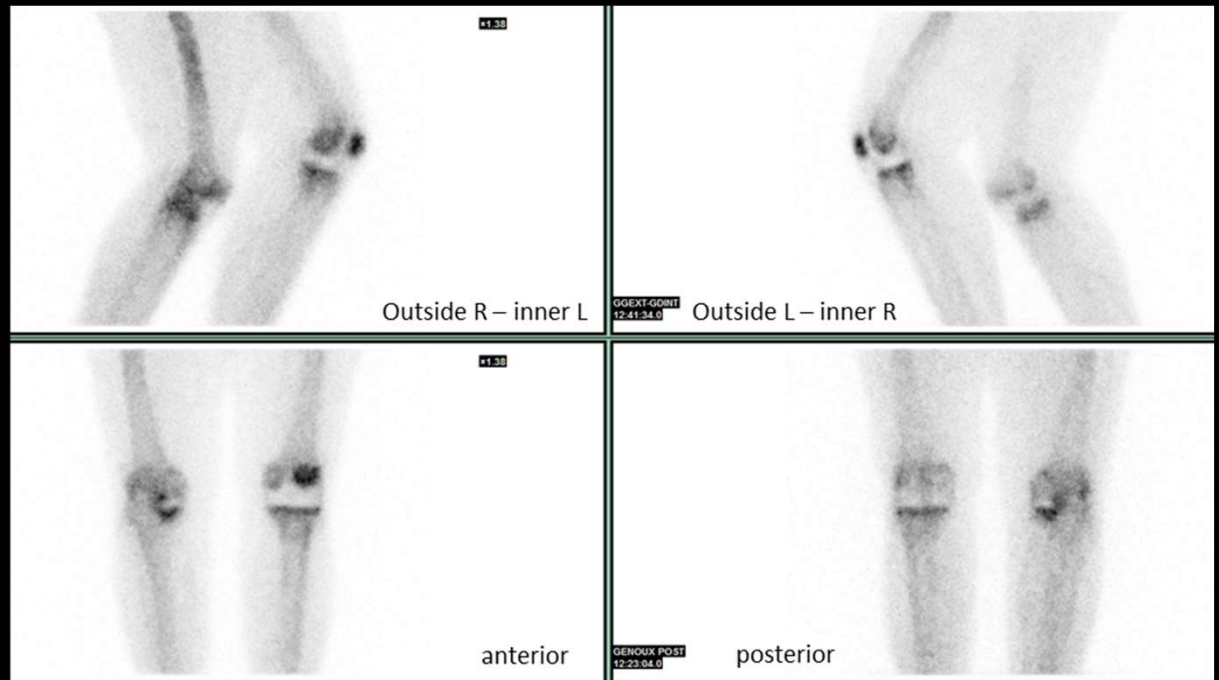
800 Series Bone SPECT
5.5 Minute SPECT

ACQUISITION

19.25 mCi ^{99m}Tc-HDP
Imaging 2 hours post injection
LEHRS collimator
SwiftScan SPECT

HISTORY

Breast neoplasia work-up.

FINDINGS

No metastatic bone spread of significant size.
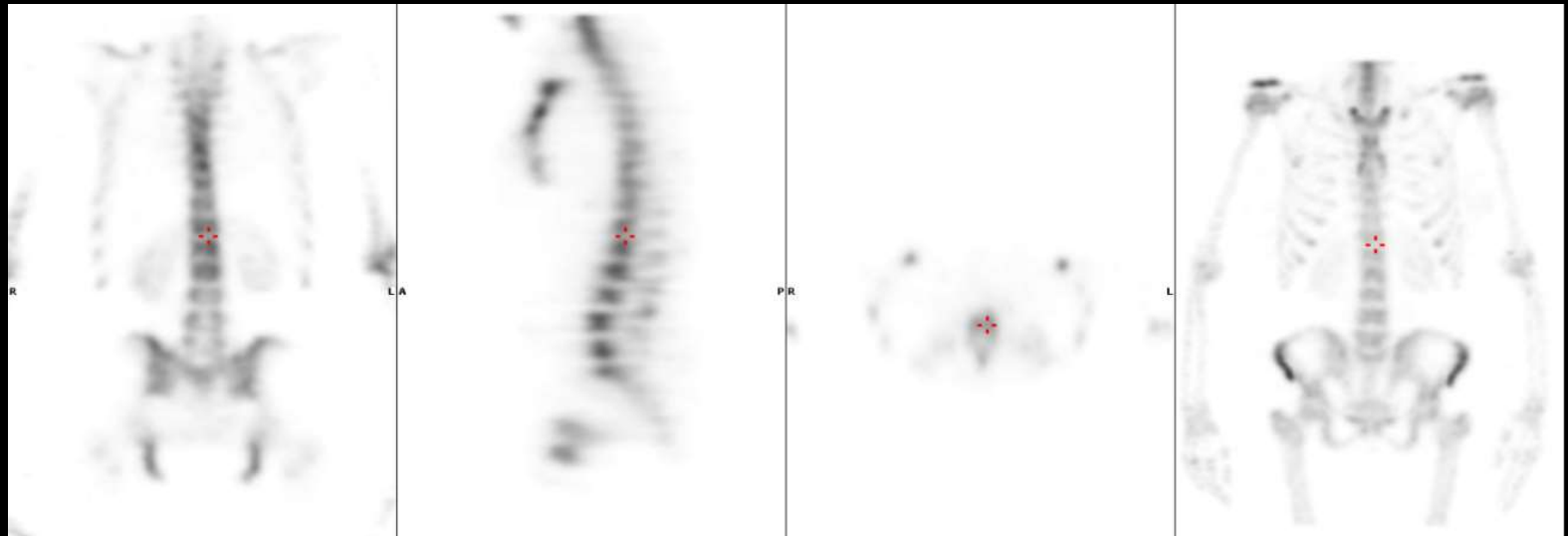
NM/CT 870DR WB Bone & SPECT/CT
11 Minute WB & 7.5 Minute SPECT

ACQUISITION

26.7 mCi ^{99m}Tc-MDP
140 kV
93-213 mA

HISTORY

Male
64 YO
Metastatic renal cell carcinoma to the bone

FINDINGS

Increased uptake posterior lateral right 7th rib.
Suspicious for metastases.

Degenerative uptake involving T12, costo-vertebral junction, sterno-clavicular joints, bilateral shoulders, hips, knees and left foot.
Total elbow arthroplasty.
No other abnormal uptake suggesting metastases.
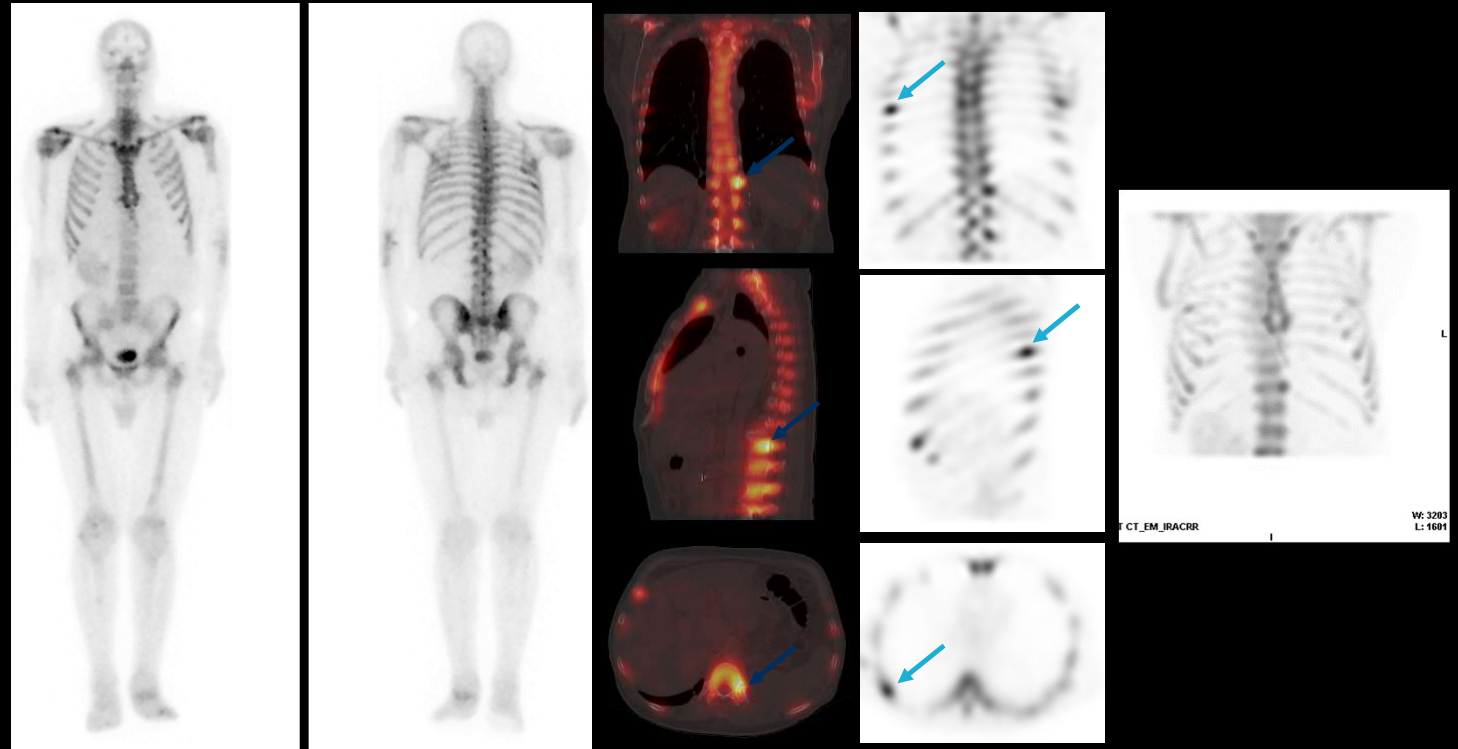
11 min WB with Clarity 2D

NM/CT 870 CZT Bone SPECT/CT
5.5 Minute SPECT

ACQUISITION

21.7mCi ^{99m}Tc-HDP
Step & Shoot Continuous
100kV
297mA
CTDI 6.3 mGY

HISTORY

Woman
59 YO
Height 5'11"
Breast cancer staging & low back pain

FINDINGS

High bone metabolism in the facet joint L3-L4.
Left: degenerative painful facet arthropathy (disease at joint)
No bone metastasis.

IRNCRR Coronals   IRNCRR Sagittals   IRNCRR Transaxials

Images Courtesy of Dr. Ph. Declerck, Dr. F. Lemonnier, Clinic Saint Jean, Belgium
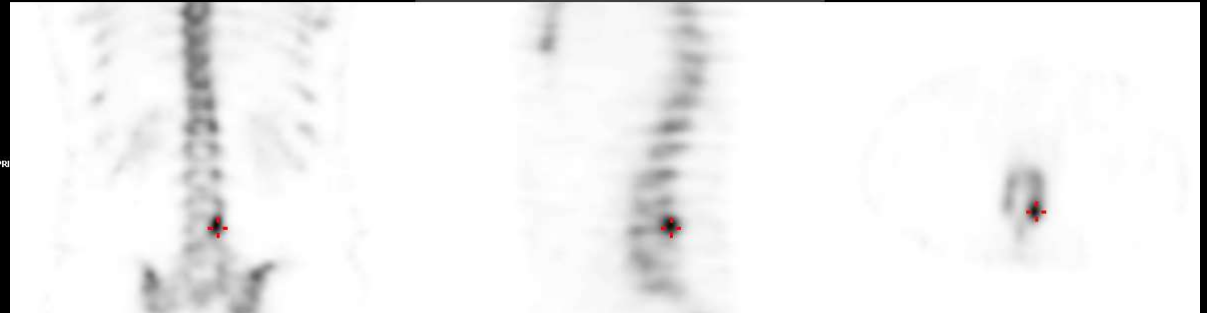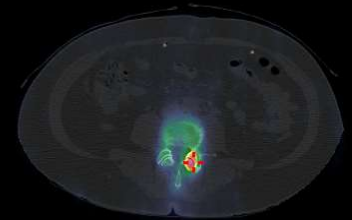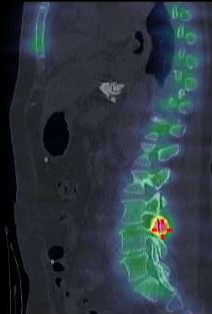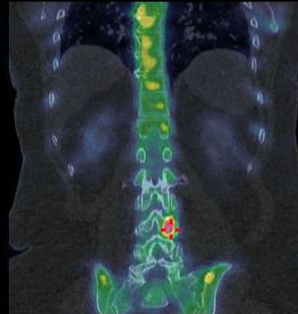
Parathyroid SPECT/CT
NM/CT 850

ACQUISITION

20mCi ^{99m}Tc-Sestimibi
SwiftScan SPECT – 9 minutes
120kV
20mA

HISTORY

Hypercalcemia
Elevated PTH

FINDINGS

Normal uptake in parotid glands, submandibular glands & thyroid gland. Persistent focal uptake behind right thyroid lobe consistent w/ right sided parathyroid adenoma.

Late Planar

Images courtesy Great River Medical Center
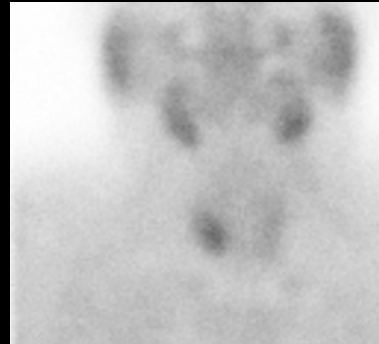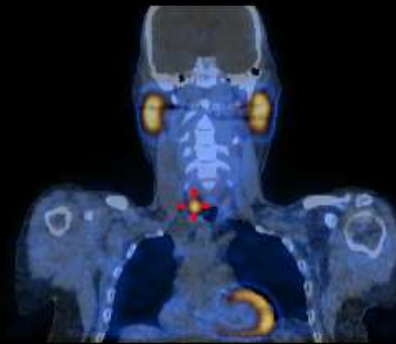
123I SPECT/CT
NM/CT 860

ACQUISITION

SPECT 20 min
120kV 100-200mA
Smart mA
Auto mA
ASiR

HISTORY

Female
43 YO
Thyroid CA
Post Thyroidectomy

FINDINGS

Multiple small foci of activity in the neck.
These were originally thought to be residual thyroid bed activity from the WB image.
SPECT/CT was able to show the superior most focus to be a metastatic lesion.

IRNCRR Coronals

IRNCRR Sagittals

IRNCRR Transaxials

Images courtesy The Miriam Hospital, Providence, RI, USA, Dr. Yoo
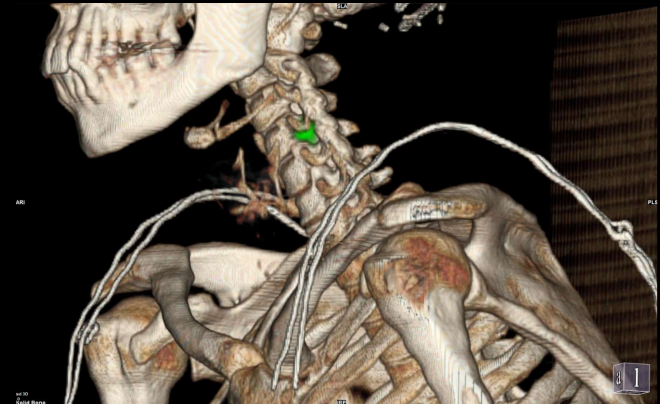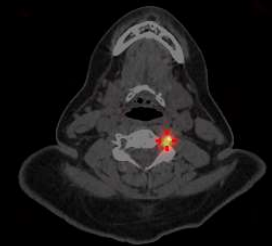
NM/CT 870DR GI Bleed SPECT/CT
7 Minute Acquisition

ACQUISITION

19 mCi ^{99m}Tc labelled RBCs
120kV
80mA

HISTORY

Male
92 YO
Recent evidence of GI Bleed

FINDINGS

Accumulation of activity in left hemi-abdomen at 10-minute mark, which continually increases over the course of an hour.
Four-hour image shows movement of radiotracer through left hemi-colon.
Acute GI bleed in the left hemi-colon.

10-minute post injection anterior static

4.5-hour post injection anterior static

Location of initial accumulation seen on 10 MIN anterior static in left hemiabdomen
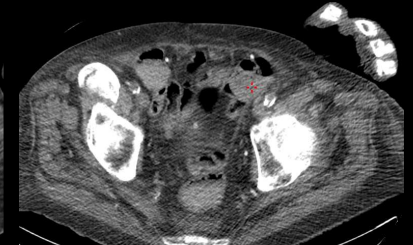
Location of eventual accumulation seen on 4 hr. anterior static in left hemicolon
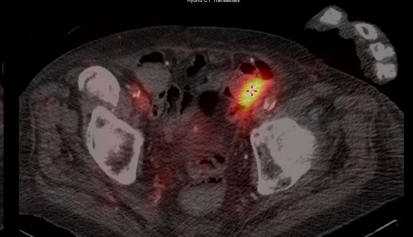
Myocardial Perfusion Imaging
NM/CT 870 CZT

ACQUISITION

Rest – 6 min.
Stress – 4 min.
120kV
20mA

Stress Non-AC
Rest Non-AC
Stress AC
Rest AC
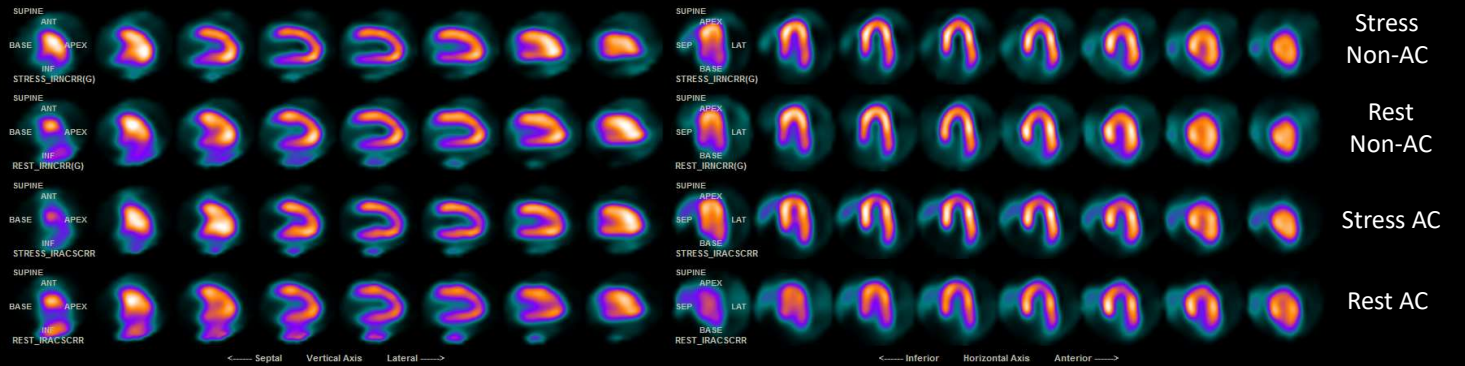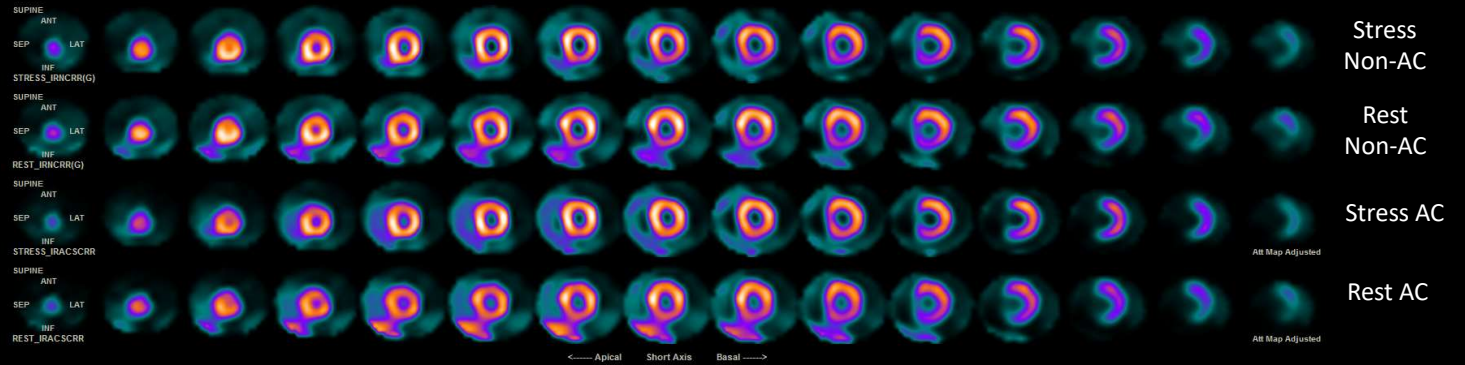
Images Courtesy Inova Center For Personalized Health , Fairfax, VA, USA

¹⁷⁷Lu-dotatate LUTATHERA® ME Acquisition
Discovery NM/CT 670 CZT

ACQUISITION

200 mCi ¹⁷⁷Lu-dotatate
LUTATHERA therapy
208 keV Peak
60 Stops @ 15 sec/stop
128² matrix
CZT – Step & Shoot Continuous
MEHRS Collimator
Total SPECT table time = 15 min

HISTORY

76.2 kg, 183 cm
Male
~60 YO
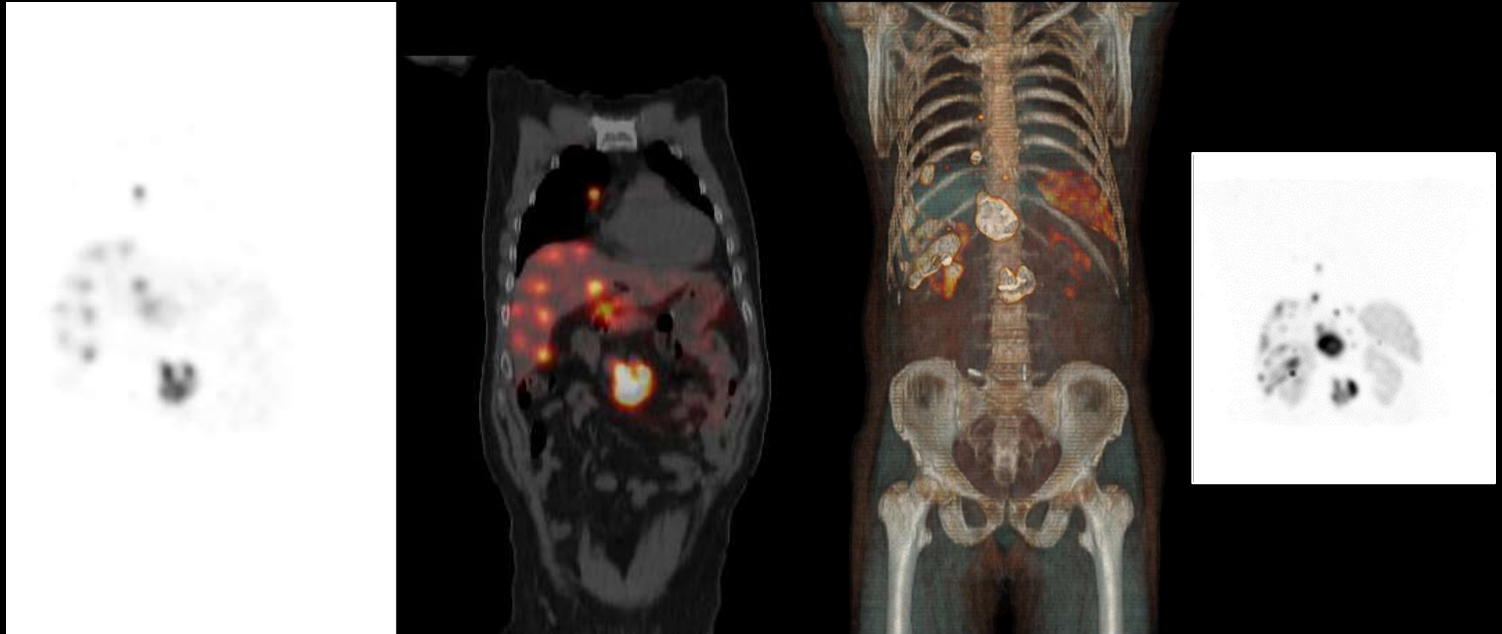
NM 830
Dual Head SPECT

- Flexible geometry for a variety of scanning orientations.
- Simultaneous, multi-axis, rapid motion.
- Flat floor plate for easy bed positioning.
- Pre-programmed, ultra fast positioning.
- Upgradable to SPECT/CT.

70 cm

500 lb. weight limit
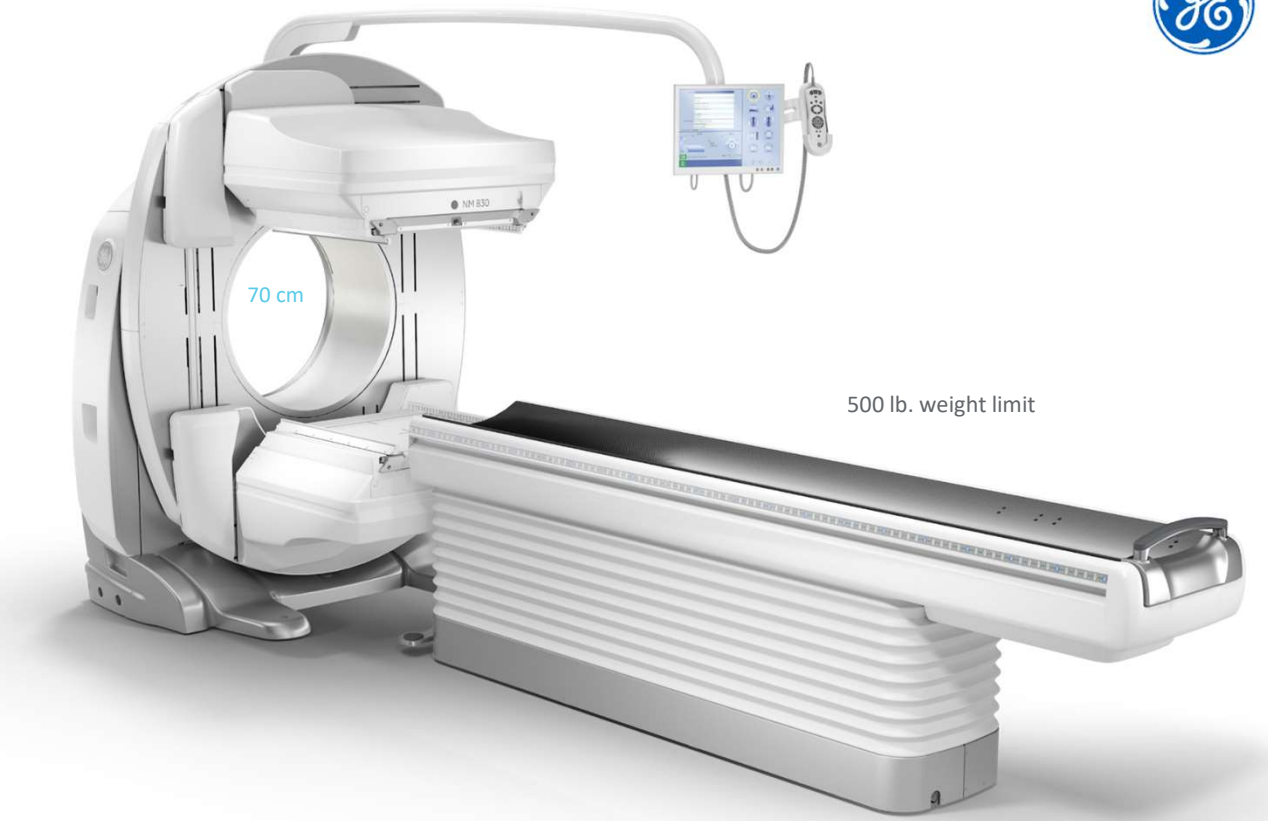
NM/CT 850
8-slice Low-Dose CT for Attenuation Correction & Localization

- SmartConsole
- Flexible geometry
- Simultaneous, multi-axis, rapid motion
- Flat floor plate for easy bed positioning
- Pre-programmed, ultra fast positioning
- Upgradable to 860
- Effortless quantitation with Q.Volumetrix MI
- Revolution ACTs based CT
- Operates at 30mA
- 1.25mm slice thickness - better resolution
- kV settings - 80, 100, 120, 140
- Smart mA & Auto mA
- Q.AC*
- Wideview*
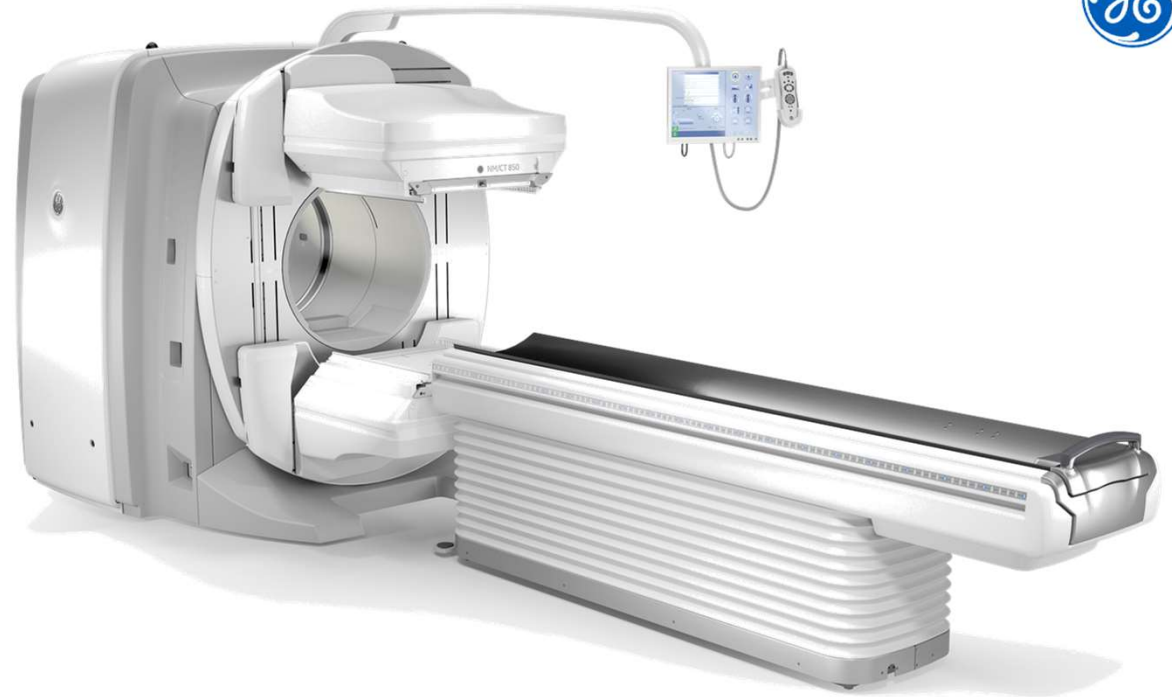
Imaged on NM/CT 860
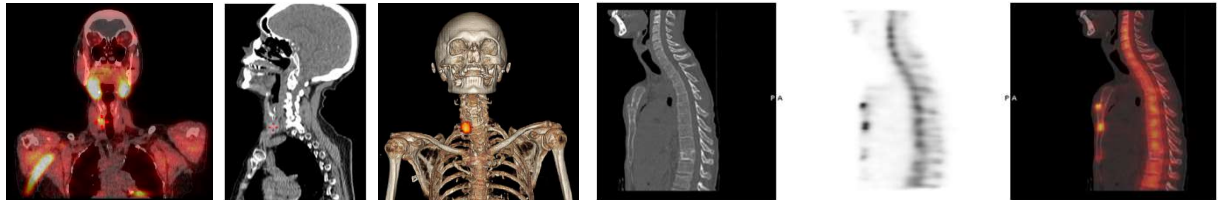
*optional

NM/CT 860

8-slice High-Resolution CT Ready For Stand-Alone Use

- SmartConsole
- Flexible geometry
- Simultaneous, multi-axis, rapid motion
- Flat floor plate for easy bed positioning
- Effortless quantitation with Q.Volumetrix MI
- Pre-programed, ultra fast positioning
- Revolution ACTs based CT
- ASiR included as Standard
- Operates at 10-200mA
- 1.25mm slice thickness
- kV settings-80, 100, 120, 140
- Smart mA & Auto mA
- Q.AC*
- Wideview*

Imaged on NM/CT 860
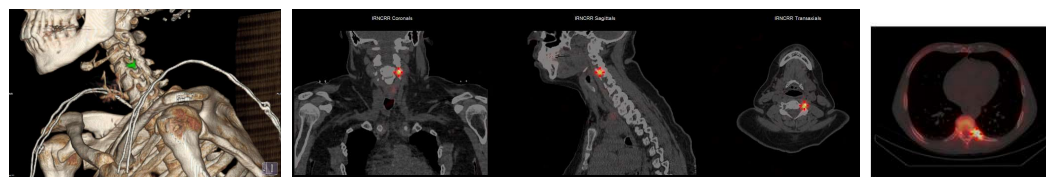
*optional

NM/CT 870 DR

16-Slice Diagnostic CT Meeting All Your CT Needs

- SmartConsole
- Flexible geometry
- Simultaneous, multi-axis, rapid motion
- Flat floor plate for easy bed positioning
- Effortless quantitation with Q.Volumetrix MI
- Pre-programmed, ultra fast positioning
- Upgradable to 870 CZT
- Forward production Optima 540 CT
- ASiR*
- SmartMAR*
- Operates at 10-440mA
- 0.625mm slice thickness
- kV settings - 80, 100, 120, 140
- Smart mA & Auto mA
- Single breath-hold scans with 0.5s rotation
- Q.AC*
- Wideview*
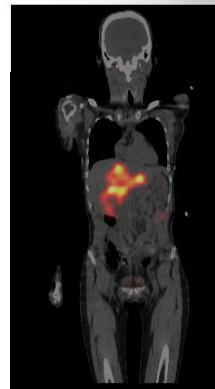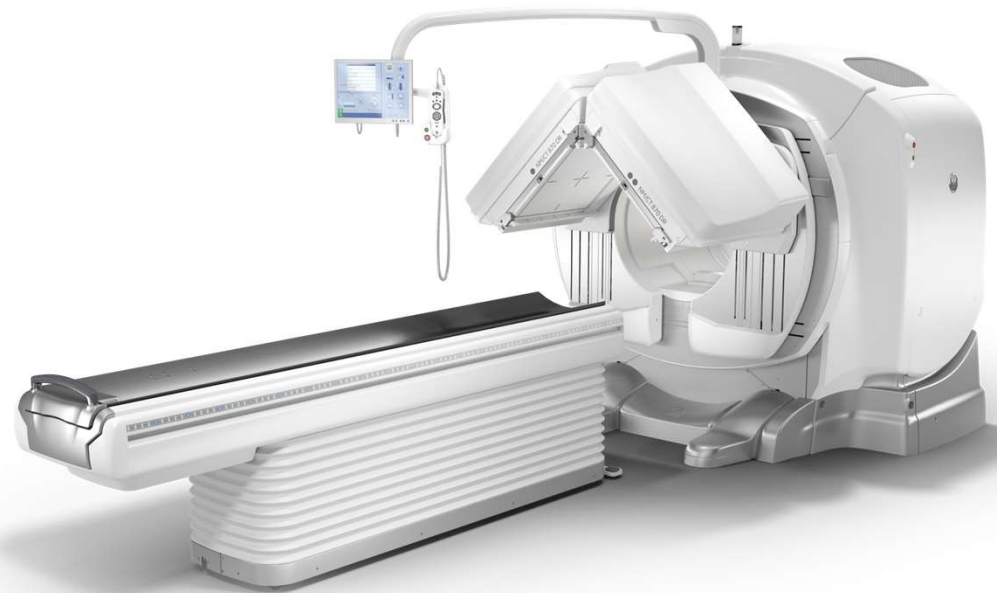
Imaged on NM/CT 870DR
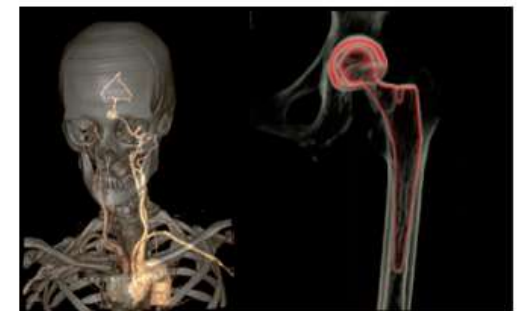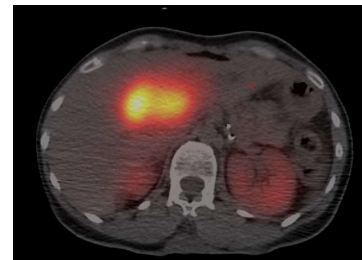
*optional

NM/CT 870 CZT
Full Digital SPECT/CT

- SmartConsole
- Flexible geometry
- Simultaneous, multi-axis, rapid motion
- Flat floor plate for easy bed positioning
- Pre-programed, ultra fast positioning
- Effortless quantitation with Q.Volumetrix MI
- Lister application
- Simultaneous dual-isotope imaging
- Forward production Optima 540 CT
- ASiR*
- SmartMAR*
- Operates at 10-440mA
- 0.625mm slice thickness
- kV settings-80, 100, 120, 140
- Smart mA & Auto mA
- Single breath-hold scans with 0.5-second rotation
- Q.AC*
- Wideview*
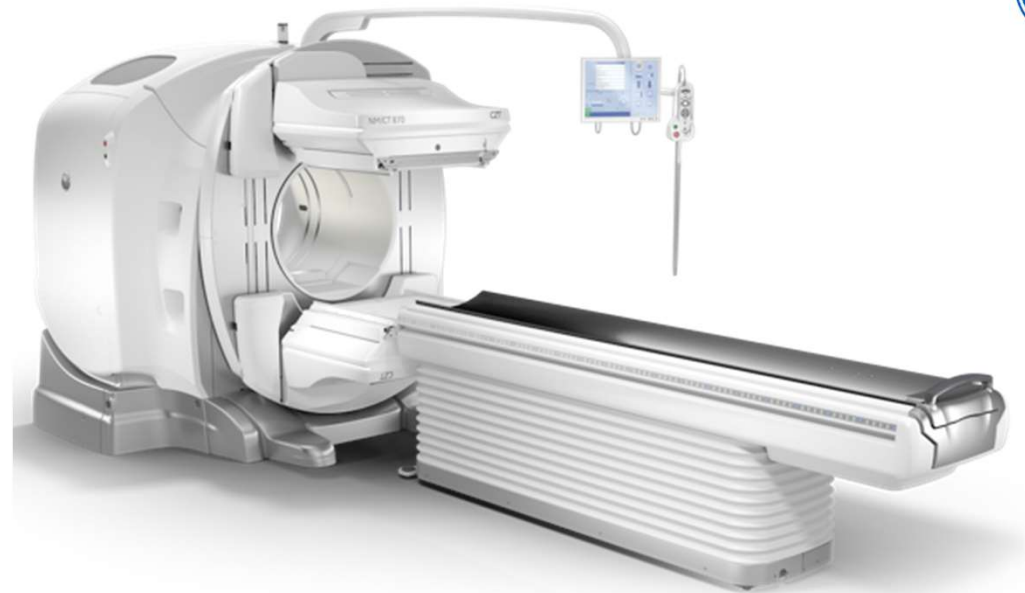
Imaged on NM/CT 870CZT
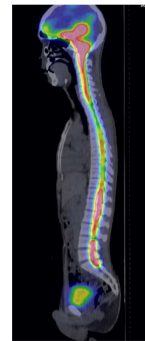
*optional

Placeholder Slide

CZT Information

The following section of 11 additional CZT related slides are purposely hidden. They are not necessary for a quick overview. If you want to go deeper into CZT, simply unhide any or all of them here. The blue GE icon on each slide will take you back to the Family Portrait slide to resume the typical PPT again.

Digital SPECT/CT
Achieve More with The Power of CZT

NM/CT 870 CZT
Breakthrough SPECT Technology

CZT Technology
Direct Conversion Detectors

- 60x more photons - improves energy resolution.
- No deadtime/detector saturation.
- Accurate event locations detection.
- Recovers lost spatial resolution.
- Elimination of analog noise.

Conventional Technology
Indirect Conversion
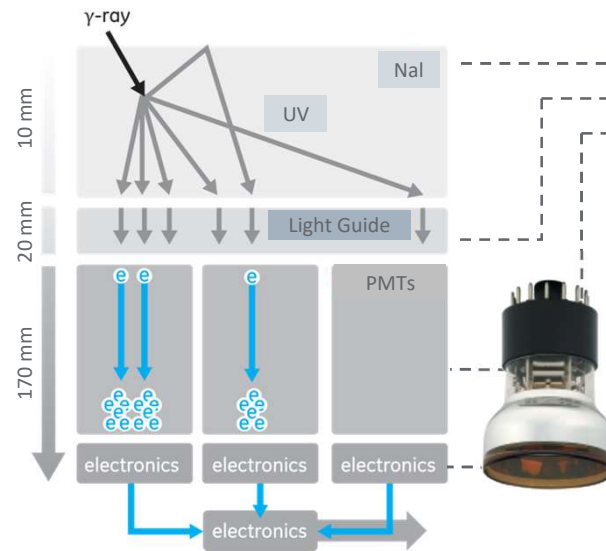
CZT Technology
Direct Conversion
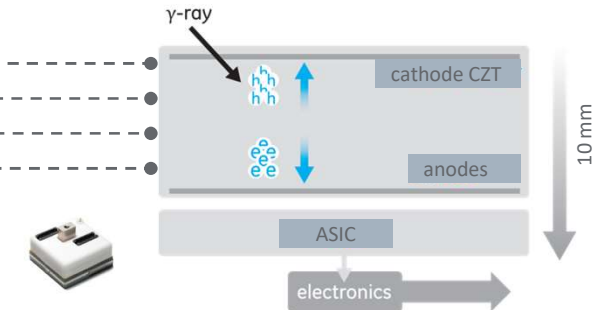
CZT Technology
Why Digital

CZT (Cadmium Zinc Telluride) Technology:

- Direct conversion detectors

- Pixelated detectors with registered collimation

- 25% greater optimal FOV than NaI detectors

- 67% reduction in dead space (2.5 vs. 7.5 cm on NaI systems)

- Step & Shoot Continuous SPECT acquisition mode

- High uptime due to CZT module reliability

- WEHR collimator:
  ^{99m}Tc, ^{201}Tl, ^{123}I, ^{133}Xe, ^{177}Lu (113 keV)

- MEHRS collimator:
  ^{177}Lu (208keV), ^{111}In & ^{67}Ga
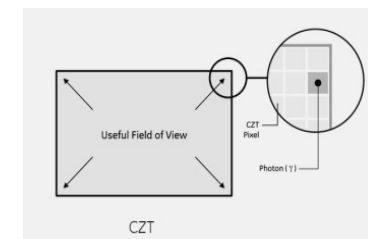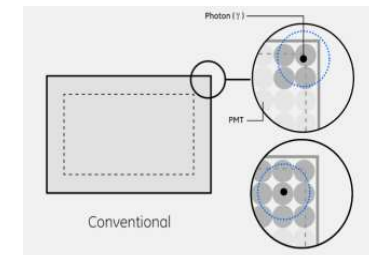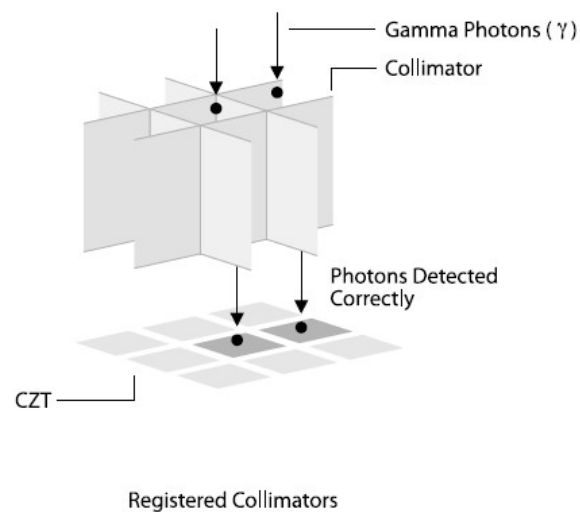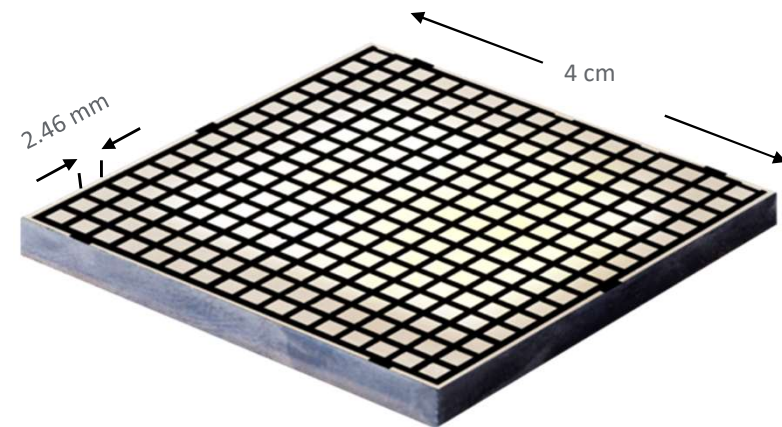
CZT Technology
Achieve Clinical Excellence

- Up to **75%** reduction in scan time or in injected dose[6]

- As fast as **5-minute** Bone SPECT or WB Planar scans[1]

- Cardiac scans in as little as **4-6 minutes**

- Greater than **40%** improvement in SPECT contrast-to-noise ratio, an important factor in lesion detectability[1]

- Improved spatial resolution of **2.8 mm** versus 4.3 mm (NaI)*

- Simultaneous dual-isotope imaging (SDIS) through improved energy resolution of **6.3%** versus 9.5% (NaI)
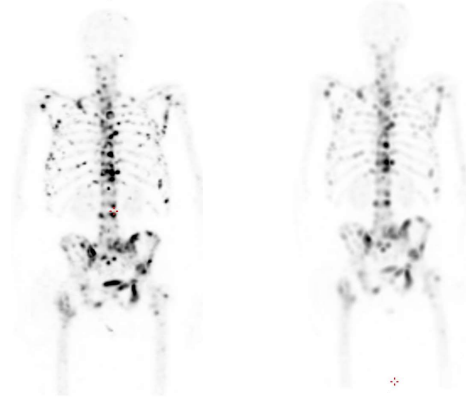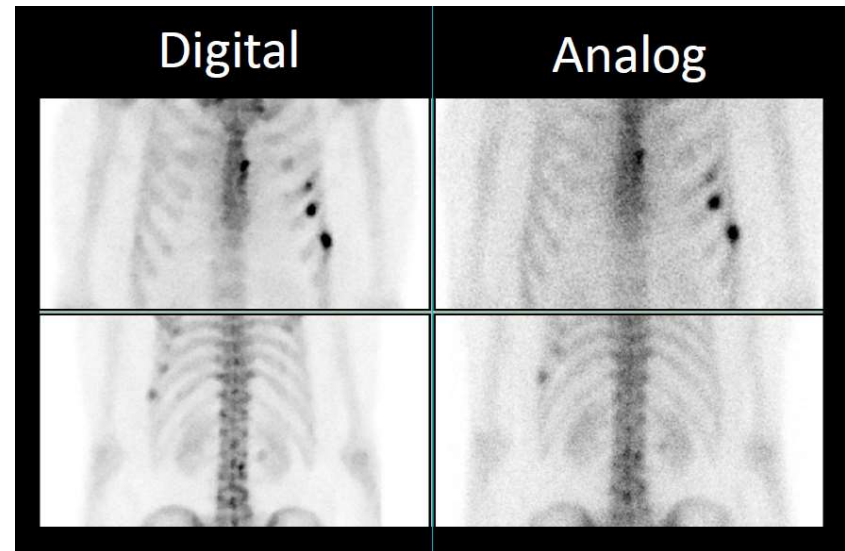
*At detector surface with WEHR collimator
Image courtesy of Turku University Hospital, Finland, and Tromsø University Hospital, Norway

CZT Technology
Reduced Imaging Times

- SPECT contrast-to-noise ratio (CNR) was measured on the 870CZT at 7.5-minute, 5-minute and 3.75-minute scan times.

- All values were found to be equal to or better than those measured on 870 DR at 7.5 minutes.[4]

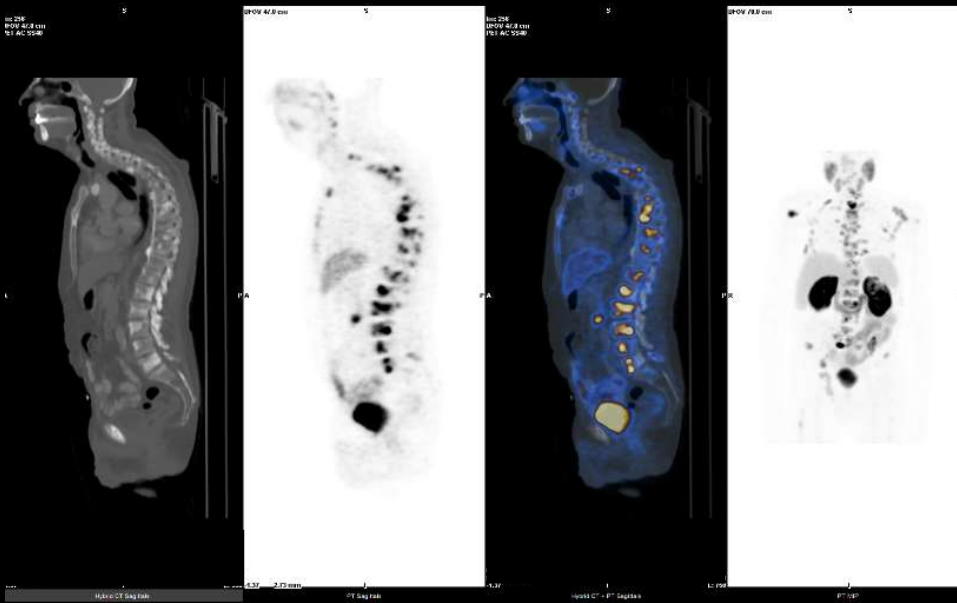**Contrast-to-Noise Ratio With Time Reduction**

Acquisition time	37	28	22	17	13	10
7:30 min — NaI 50%	28.45	36.19	25.96	27.91	10.47	4.37
7:30 min — CZT 50%	42.89	53.53	38.93	38.96	18.35	6.64
5:00 min — CZT 33%	34.56	43.68	31.77	30.47	13.63	4.87
3:45 min — CZT 25%	34.25	43.1	32.03	30.24	13.61	4.73

NaI

CZT

7.5 min   5.0 min   3.75 min
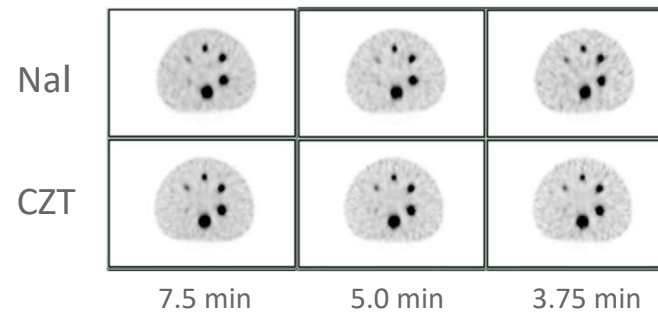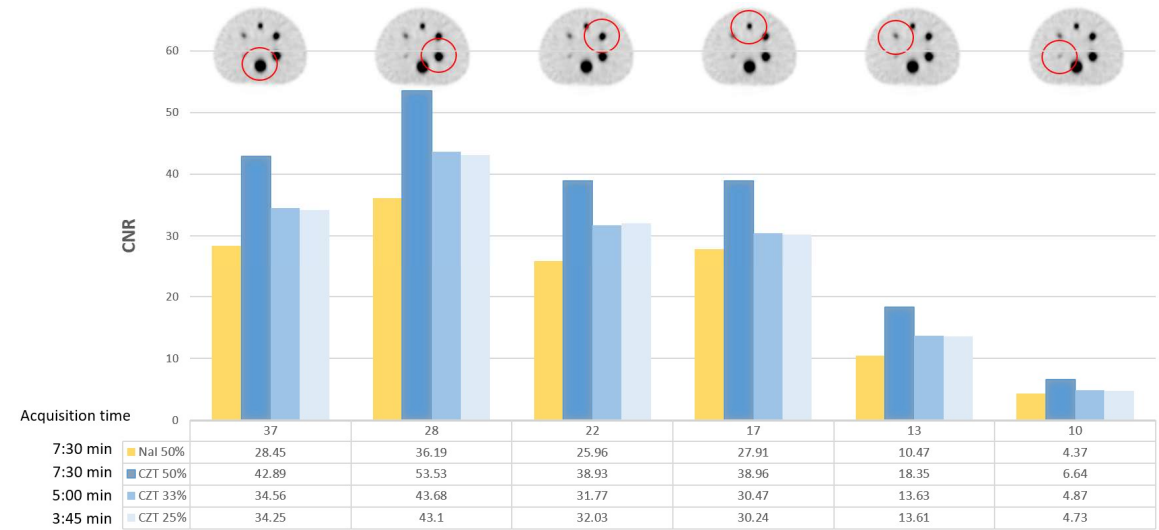
CZT Technology

- **40% higher** count rate.
- No dead time/detector saturation.
- Important in high-count rate isotope imaging such as ^{177}Lu .
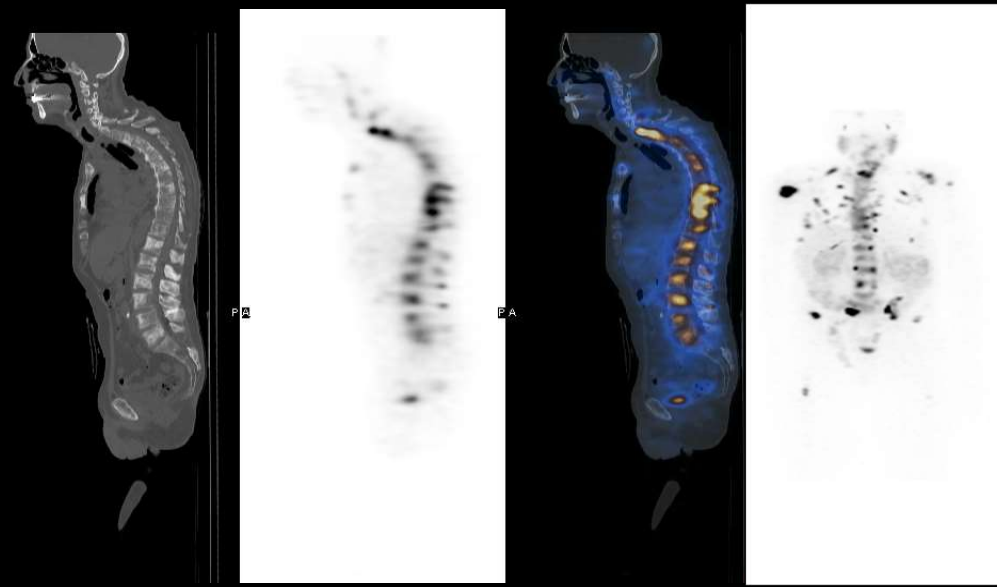- Maintains quantitative accuracy with high-count-rate tracers.

Count rate

CZT Technology
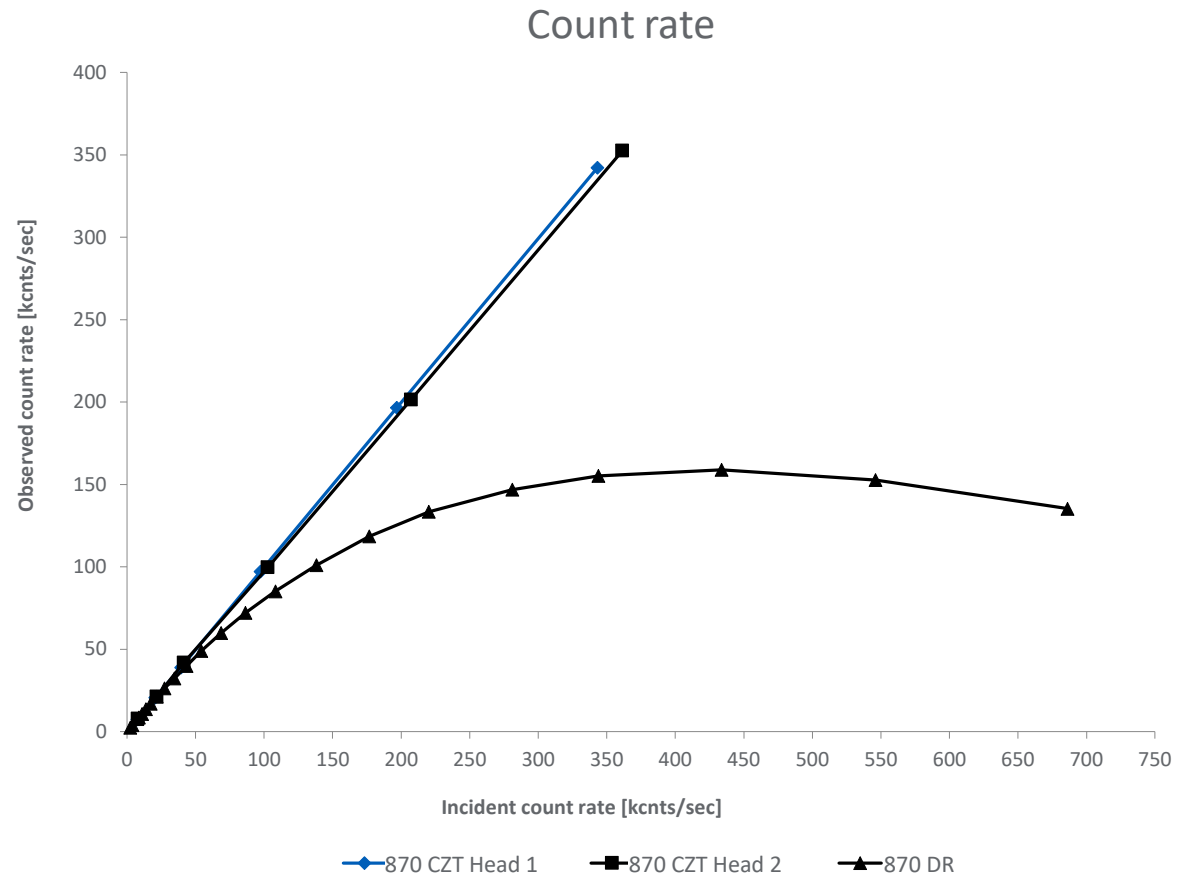
68Ga PSMA

177Lu PSMA

Baseline scan: March 2016

Theranostics: 4 hr. post 177Lu177 therapeutic dose injection scan July 2016

Image courtesy of Prof Zohar Keidar, Rambam Health Care Center, Israel

CZT Technology

Improved Energy Resolution of 6.3%

Discriminate between different low-energy peaks and enable simultaneous dual isotope imaging:

- MIBG & MDP scans
- DaTscan™ & HMPAO scans
- AdreView & Myoview scans

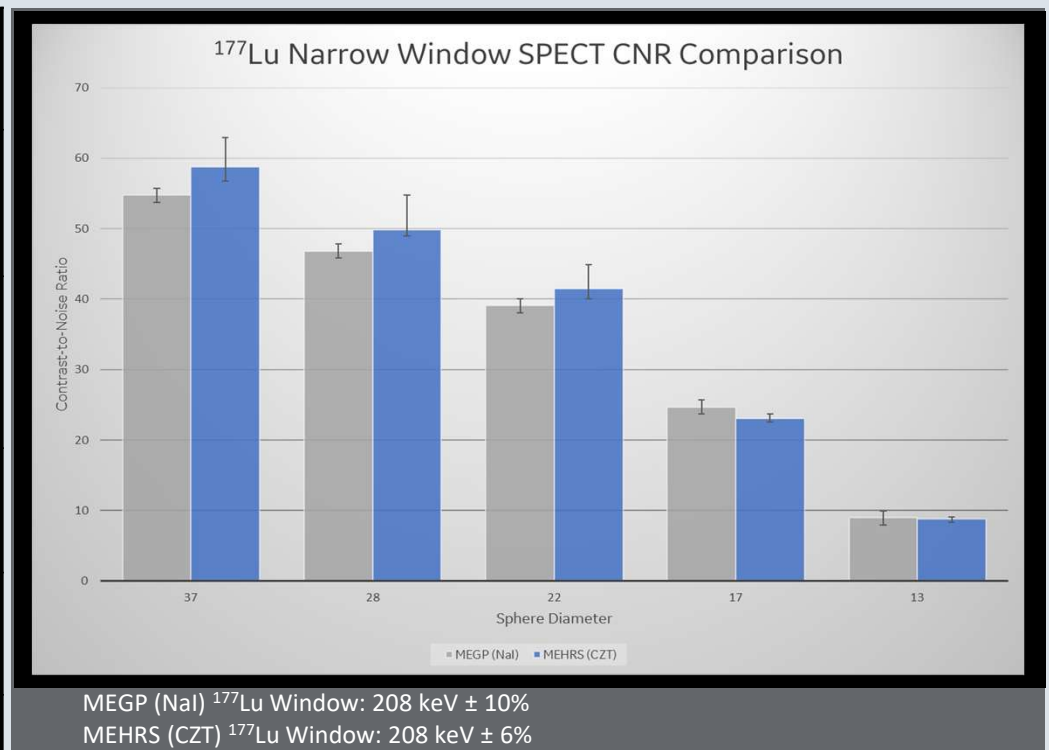| Cortical Region	Patient	Normal	Diff.	Z-Score
Prefrontal Lateral R	0.87	0.96	-0.09	-4.49
Prefrontal Lateral L	0.85	0.95	-0.11	-5.76
Prefrontal Medial R	0.84	0.95	-0.11	-3.53
Prefrontal Medial L	0.87	0.95	-0.07	-2.18
Sensorimotor R	0.98	0.94	0.03	1.26
Sensorimotor L	0.94	0.95	-0.00	-0.05
Anterior Cingulate R	0.85	0.93	-0.08	-1.53
Anterior Cingulate L	0.82	0.94	-0.12	-2.36
Posterior Cingulate R	1.01	0.99	0.02	0.54
Posterior Cingulate L	0.99	0.98	0.00	0.04
Precuneus R	1.13	1.00	0.13	3.99
Precuneus L	1.13	0.98	0.15	3.86
Parietal Superior R	0.99	0.91	0.08	1.92
Parietal Superior L	0.88	0.87	0.01	0.31
Parietal Inferior R	0.98	0.97	0.01	0.50
Parietal Inferior L	0.89	0.95	-0.06	-2.36
Occipital Lateral R	1.07	0.92	0.16	6.15
Occipital Lateral L	1.04	0.92	0.12	5.67
Primary Visual R	1.14	1.00	0.14	2.77
Primary Visual L	1.03	1.01	0.02	0.68
Temporal Lateral R	0.77	0.93	-0.16	-6.75
Temporal Lateral L	0.85	0.92	-0.07	-3.14
Temporal Mesial R	0.75	0.85	-0.10	-2.85
Temporal Mesial L	0.77	0.86	-0.09	-2.44
Cerebellum	0.95	0.93	0.02	0.69
Pons	0.83	0.87	-0.04	-0.70

Ceretec™ & DaTscan™
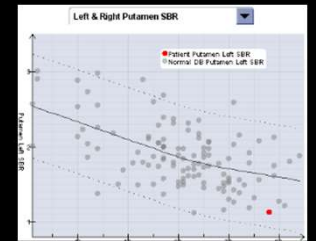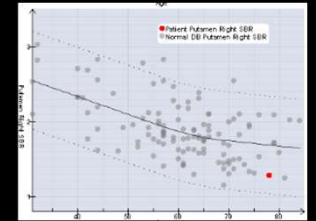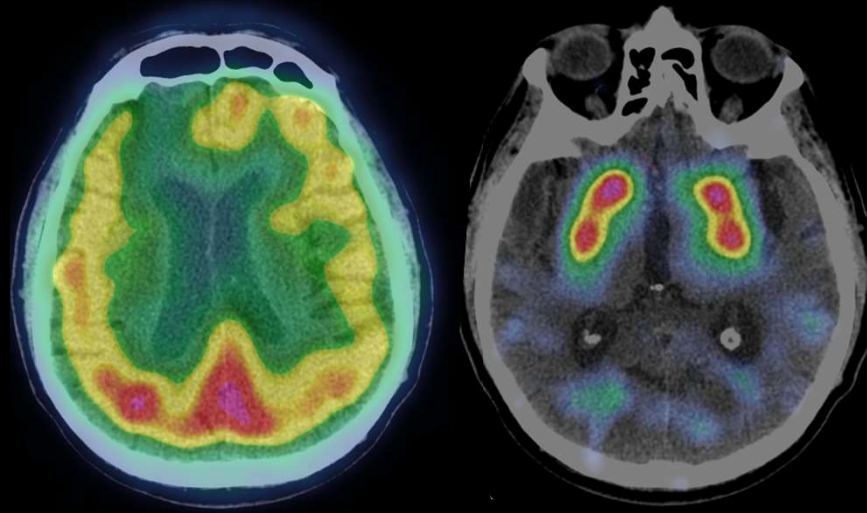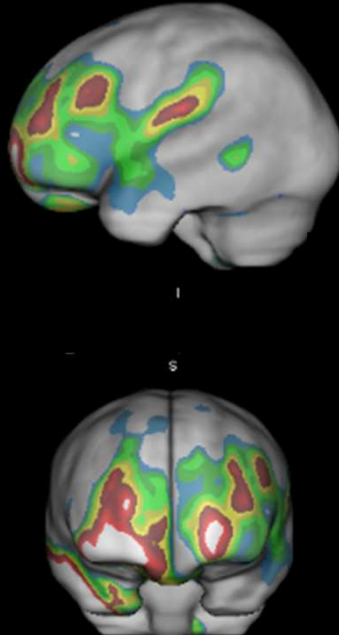
Image courtesy of Pf Scheiber, Hospices Civils de Lyon, France

MEHRS Collimator
Medium Energy High Resolution & Sensitivity

	Specification	MEHRS (CZT)	MEGP (NaI)	% Change
Sensitivity [cpm/µCi]	^{177}Lu Sensitivity @ 208 keV ± 10%	15	12	23%
	^{111}In Sensitivity @ 171 keV ± 10% & 245 keV ± 10%	251	198	27%
	^{67}Ga Sensitivity	302	135	124%
Resolution [mm]	^{57}Co Resolution @ 10 cm	10.4	9.4	(11)%

^{177}Lu Narrow Window SPECT CNR Comparison

MEGP (NaI) ^{177}Lu Window: 208 keV ± 10%
MEHRS (CZT) ^{177}Lu Window: 208 keV ± 6%

MEHRS Collimator
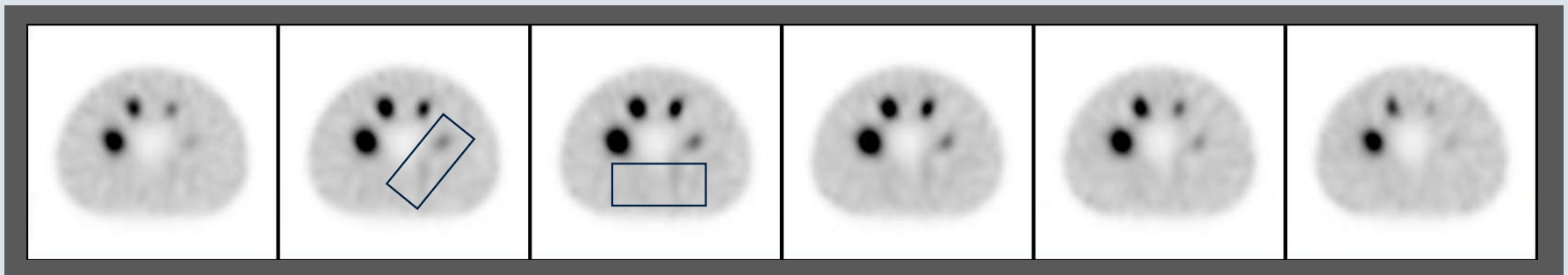## Medium Energy High Resolution & Sensitivity

^{177}Lu Phantom Images

High Peak (208 keV) <u>without</u> Scatter Correction
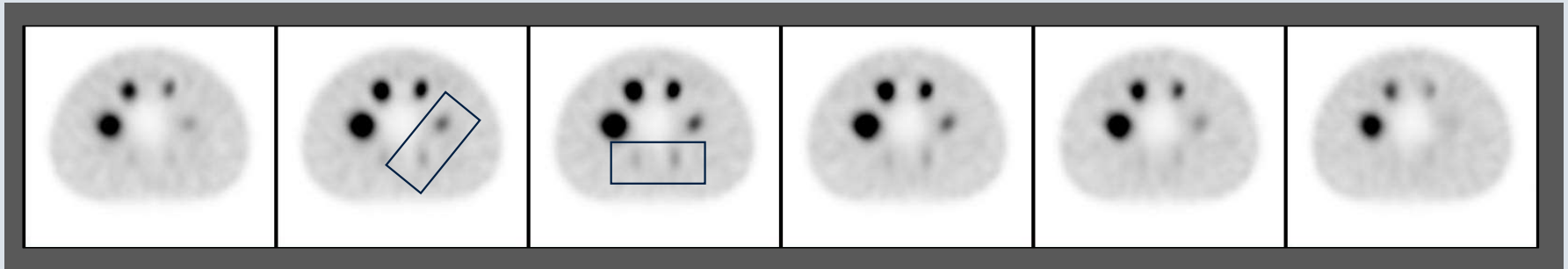
Low Peak (113 keV) <u>with</u> Scatter Correction

Q.Volumetrix MI

## Absolute Quantitation…
Absolutely Personal

Q.Volumetrix MI quantifies tracer uptake across any lesions or organs.

Provides routine quantitative results for both baseline and follow up studies.

Enhanced 2D/3D segmentation tools make uptake calculations easy for lesions, organs, and any other volume of interest.

Can be used with all isotopes and all collimators.

- Measure treatment response with absolute values
- Personalize treatment with accurate assessment of disease progression
- Save up to 31% of your clinicians' time with a streamlined workflow
- One-Click Quantitation ensures that all SPECT/CT acquisitions are sent to the Xeleris ready to be quantified
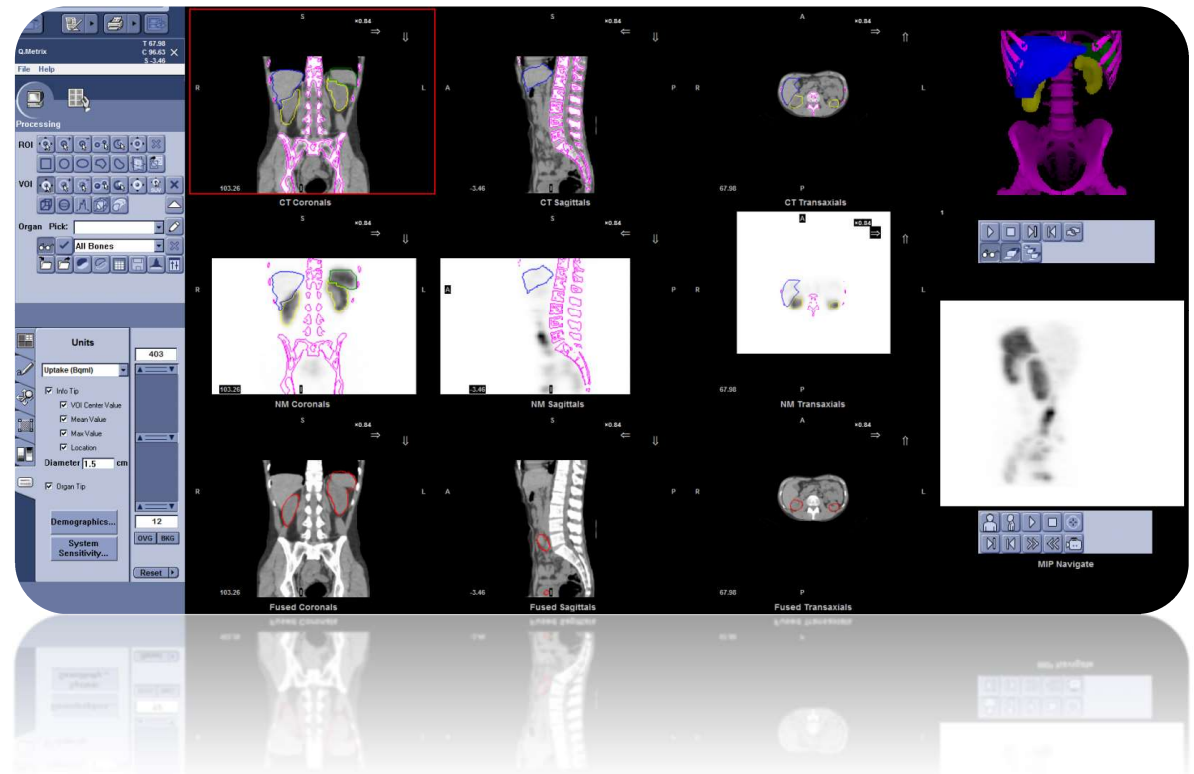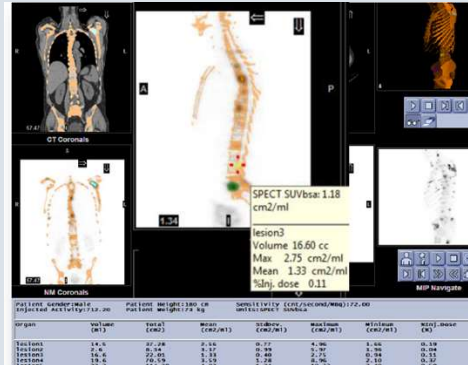
Q.Volumetrix MI
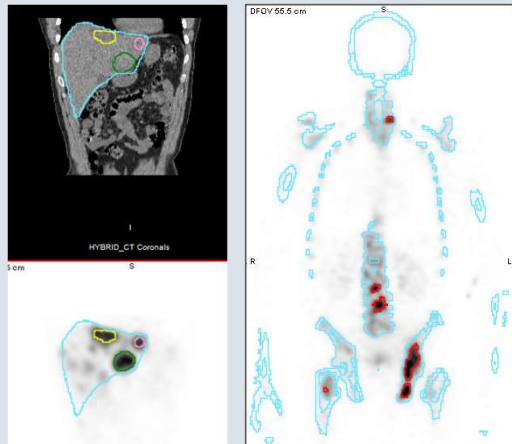
Segmentation

- Automatic or semi-automatic organ segmentation
- SUV-based lesion segmentation inside segmented organ(s)
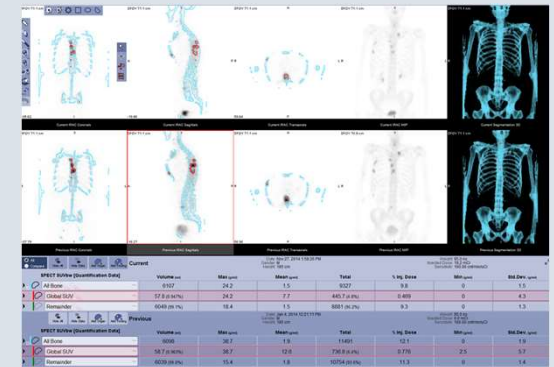- Automatic total bone segmentation

Review

Displays quantitative results for segments:
- Volume (mL)
- SUV
- Uptake (MBq/mL)
- % injected dose

Follow-up

- Compare current and previously segmented volumes with a single click
- Previous study segmentation is automatically copied to current study
- User can modify, rotate and delete as needed

Q.Volumetrix MI
¹⁷⁷Lu PSMA Treatment Follow-up
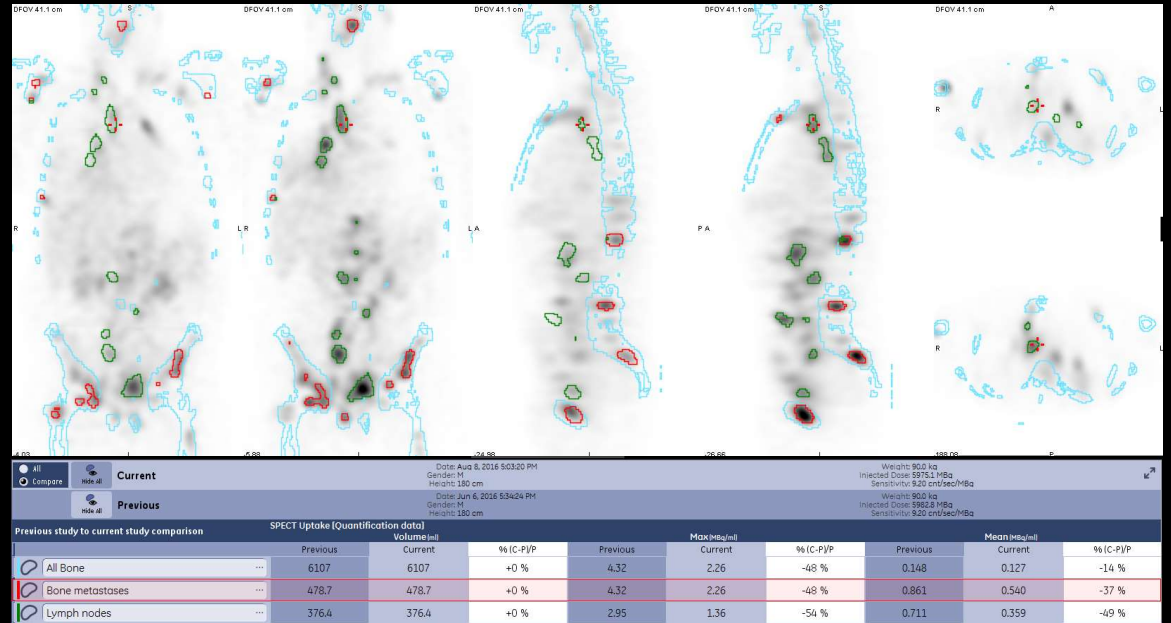
PATIENT HISTORY

62 YO male
Advanced metastastic prostate cancer.
Multiple PSMA-positive lymph node metastases.
Bone metastases after 2 cycles of ¹⁷⁷Lu PSMA therapy.

ACQUISITION

162mCi ¹⁷⁷Lu PSMA
3 FOV- 15sec/step

FINDINGS

High uptake in lymph node and bone metastases.
Size of the known, intensely PSMA-expressing lymph node and bone metastases is decreasing with treatment.

Q.Volumetrix MI
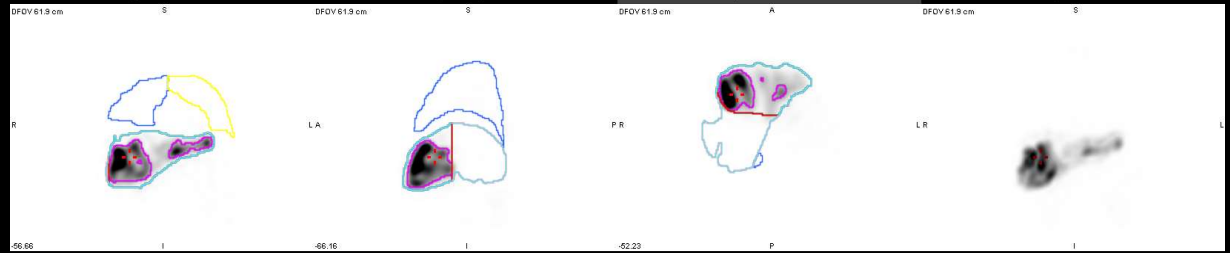## SIRT Assessment - Part 1

PATIENT HISTORY

67 YO male
Hx biliary cirrhosis & 2 hepatocellular carcinomas
Workup prior to SIR spheres therapy

ACQUISITION

3.67 mCi Tc-99m MAA -left hepatic artery
Planar of chest and abdomen
SPECT of upper abdomen
CT for AC & localization

FINDINGS

Activity in the lungs on planar images
Pulmonary venous shunt = 12% of total injected dose
Geometric mean of left hepatic lobe tumor-to-liver count
ratio is calculated at 62%.

CONCLUSION

Tracer in left hepatic lobe - pulmonary shunt of 12% on
planar images & 3% on SPECT.

Hybrid CT Coronals — Hybrid CT Sagittals — Hybrid CT Transaxials — Segmentation 3D

IRACSCRR Coronals — IRACSCRR Sagittals — IRACSCRR Transaxials — IRACSCRR MIP

Date: May 8, 2018 5:35:44 PM
Gender: M
Height: 175 cm
Weight: 85.0 kg
Injected Dose: 3.6 mCi
Sensitivity: 192.36 cnt/min/uCi

SPECT Uptake [Quantification data]

	Volume (ml)	Max (mCi/ml)	Mean (mCi/ml)	Total	% Injection dose	Min (mCi/ml)	Std.Dev. (mCi/ml)
Liver	2138	0.0122	0.000968	2.07	69.6	0	0.00156
Liver Right Lobe	972.3 (45.5%)	0.00300	0.000075	0.0724 (3.50%)	2.44	0	0.000183
Liver Left Lobe	1165 (54.5%)	0.0122	0.00171	2.00 (96.5%)	67.2	0.000003	0.00179
Lesion	384.4 (33.0%)	0.0122	0.00375	1.44 (72.1%)	48.5	0.00175	0.00178
Normal Tissue	780.8 (67.0%)	0.00175	0.000712	0.556 (27.9%)	18.7	0.000003	0.000452
Left Lung	1302	0.000184	0.000029	0.0380	1.28	0	0.000019
Right Lung	1359	0.000211	0.000025	0.0334	1.12	0	0.000019

Segment to segment comparison — SPECT Uptake [Quantification data]

	Volume (ml)			Max (mCi/ml)			Mean (mCi/ml)		
	A	B	% B/A	A	B	% B/A	A	B	% B/A
Left Lung [B]/Liver [A]	2138	1302	61 %	0.0122	0.000184	2 %	0.000968	0.000029	3 %
Left Lung [B]/Liver Left Lobe [A]	1165	1302	112 %	0.0122	0.000184	2 %	0.00171	0.000029	2 %

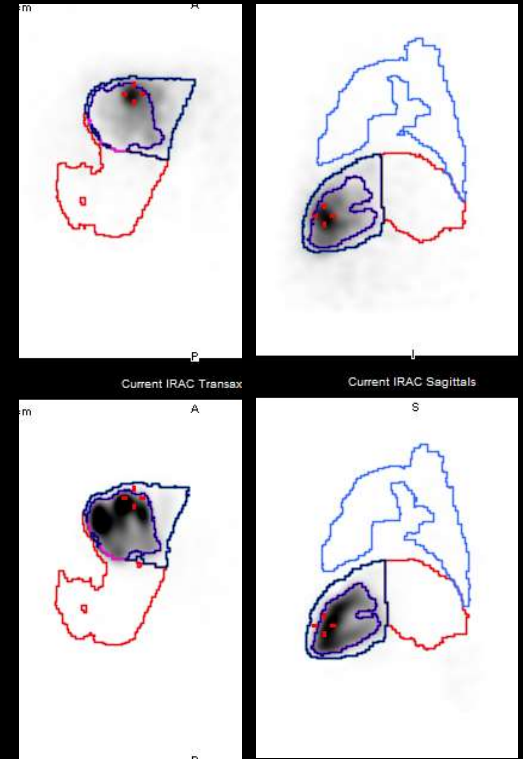Images Courtesy of Dr Aurora Poon, Austin Health, Heidelberg Australia

Y90 SPECT post treatment
Shunt = 3%

MAA Planar pretreatment
Shunt = 12%

MAA SPECT pretreatment
Shunt = 3%

Images Courtesy of Dr Aurora Poon, Austin Health, Heidelberg Australia

Q.Lung*
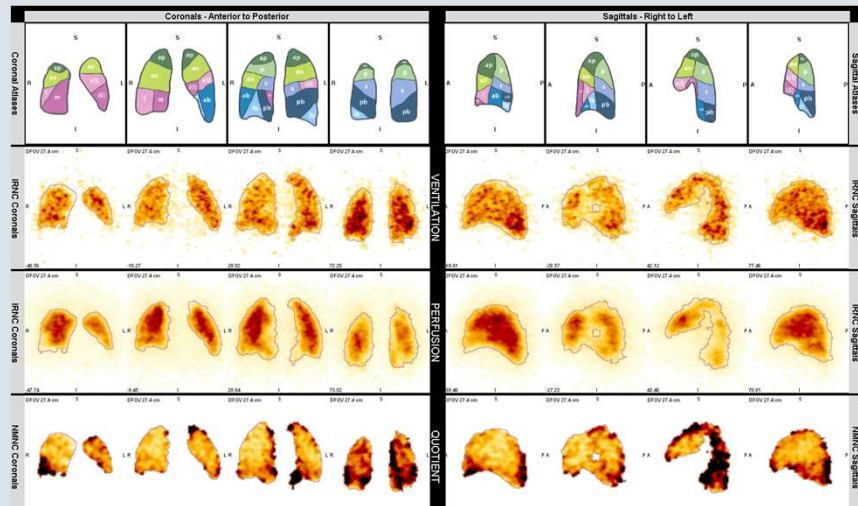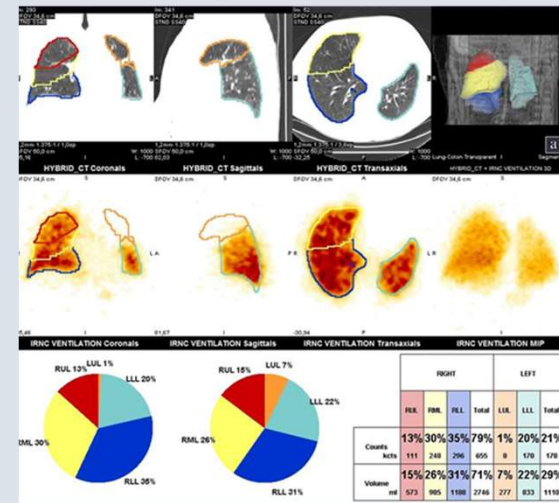
Q.Lung SPECT/CT

Diagnosis of Pulmonary Embolism (PE), Chronic Obstructive Pulmonary Disease (COPD), Emphysema, and other lung deficiencies.

Q.Lung Quant

Assess the fraction of total lung function provided by a lung (or a single lobe) to be used in pre-surgical planning.
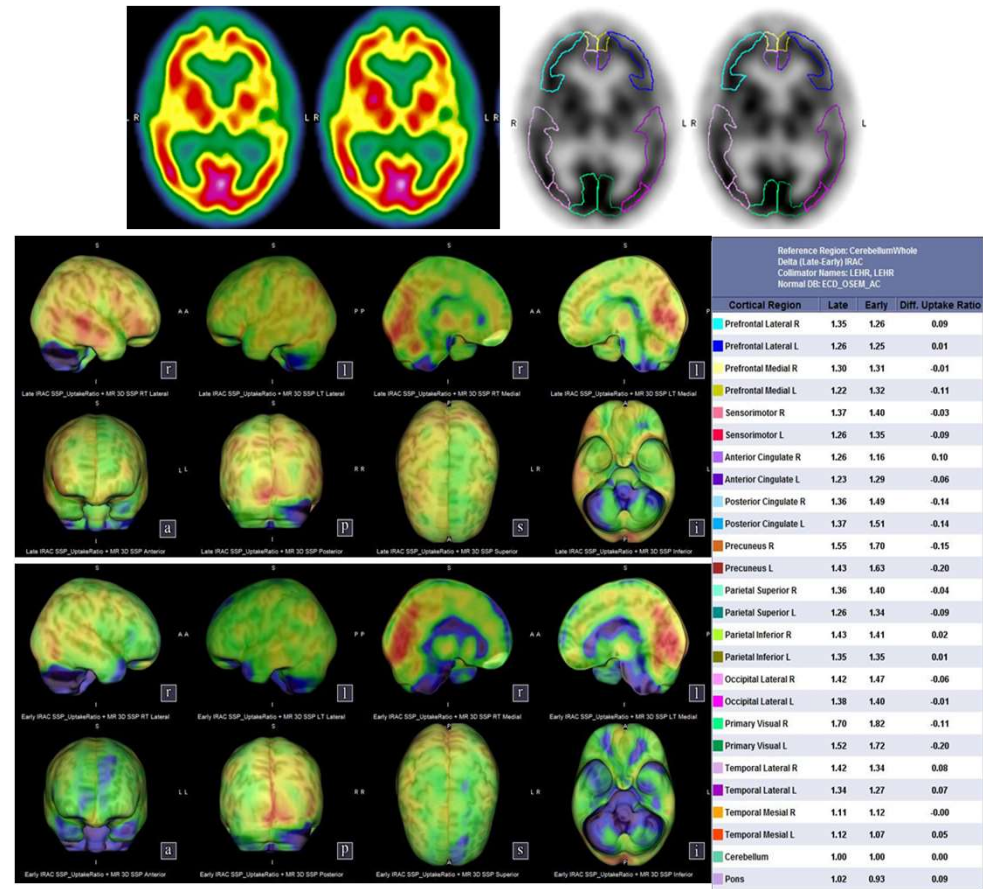

*optional

Q.Brain*

Q.Brain allows the user to visualize and quantify relative changes in the brain's metabolic function or blood flow activity between a subject's images and controls, when used with radiopharmaceuticals approved by the regulatory authority in the country of use, which may be resulting from brain function alterations in:

- Epileptic seizures
- Inflammation
- Brain death
- Traumatic Brain Injury (TBI)

Q.Brain offers:

- Co-registration with anatomic imaging (MR)
- Normal DB comparisons
- SSP modeling & automatic reports to help guide your referrers

*optional

DaTQUANT*

Generates striatal binding ratios (SBRs).

- Comparison of these ratios can be used to monitor the progression of dopamine transporters in the synapses of striatal dopaminergic neurons.

Provides accurate analysis of 123I-ioflupane images using a pre-defined template.

- More consistent, objective and repeatable when compared to manual ROI analysis.
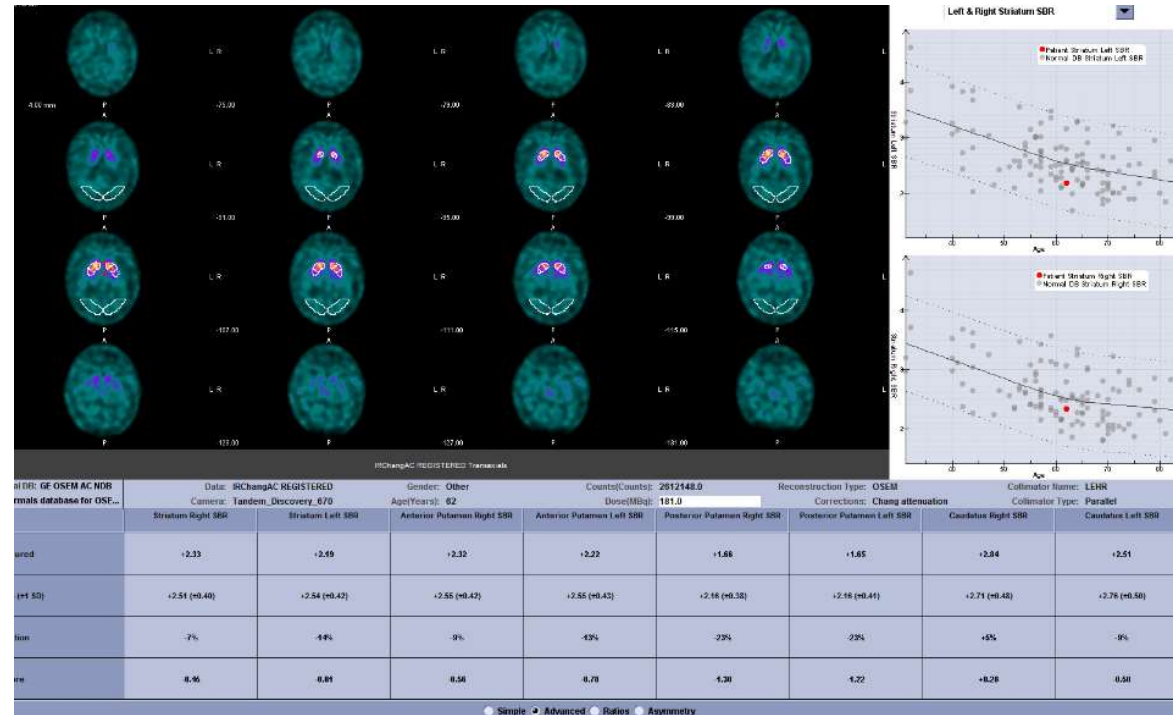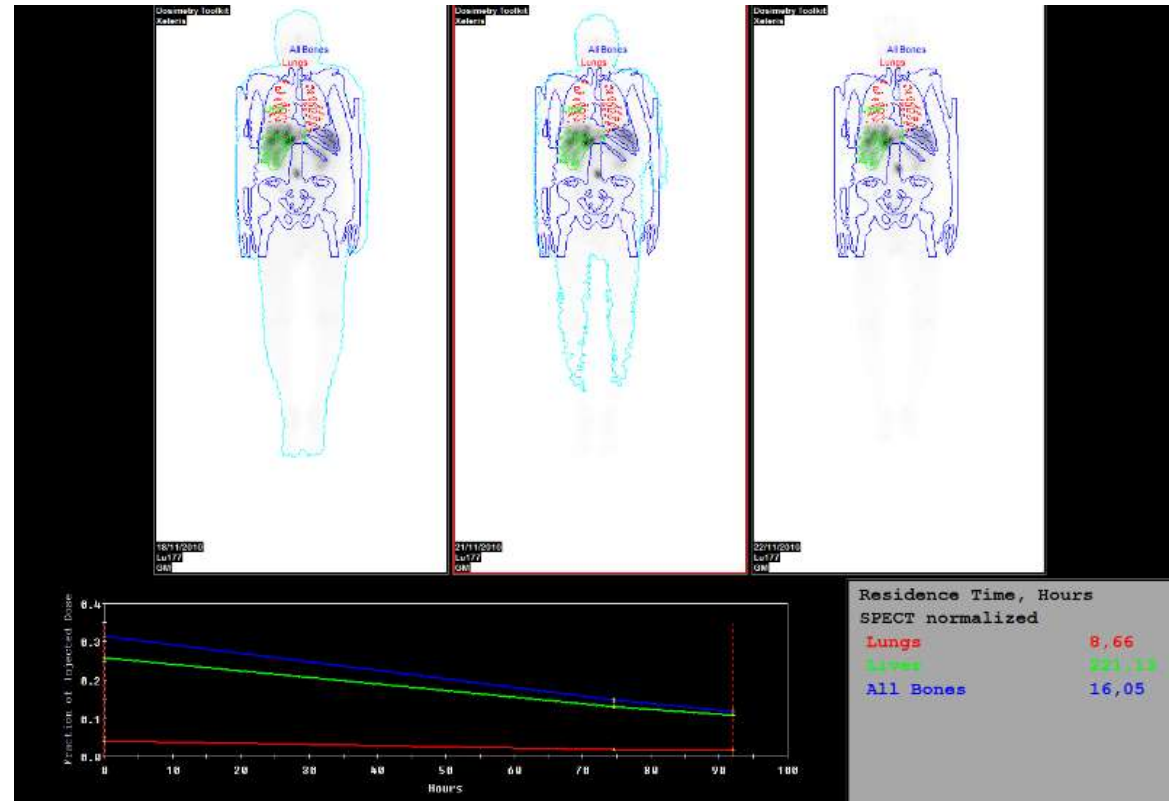

*optional

Dosimetry Toolkit*

Quantify changes in radiopharmaceutical uptake over time using multiple **SPECT/CT** and/or **planar WB** datasets.

- Calculates volume, activity, and residence time of radiopharmaceutical within any defined organs and/or lesions.
- Results may help in radiotherapy treatment planning.

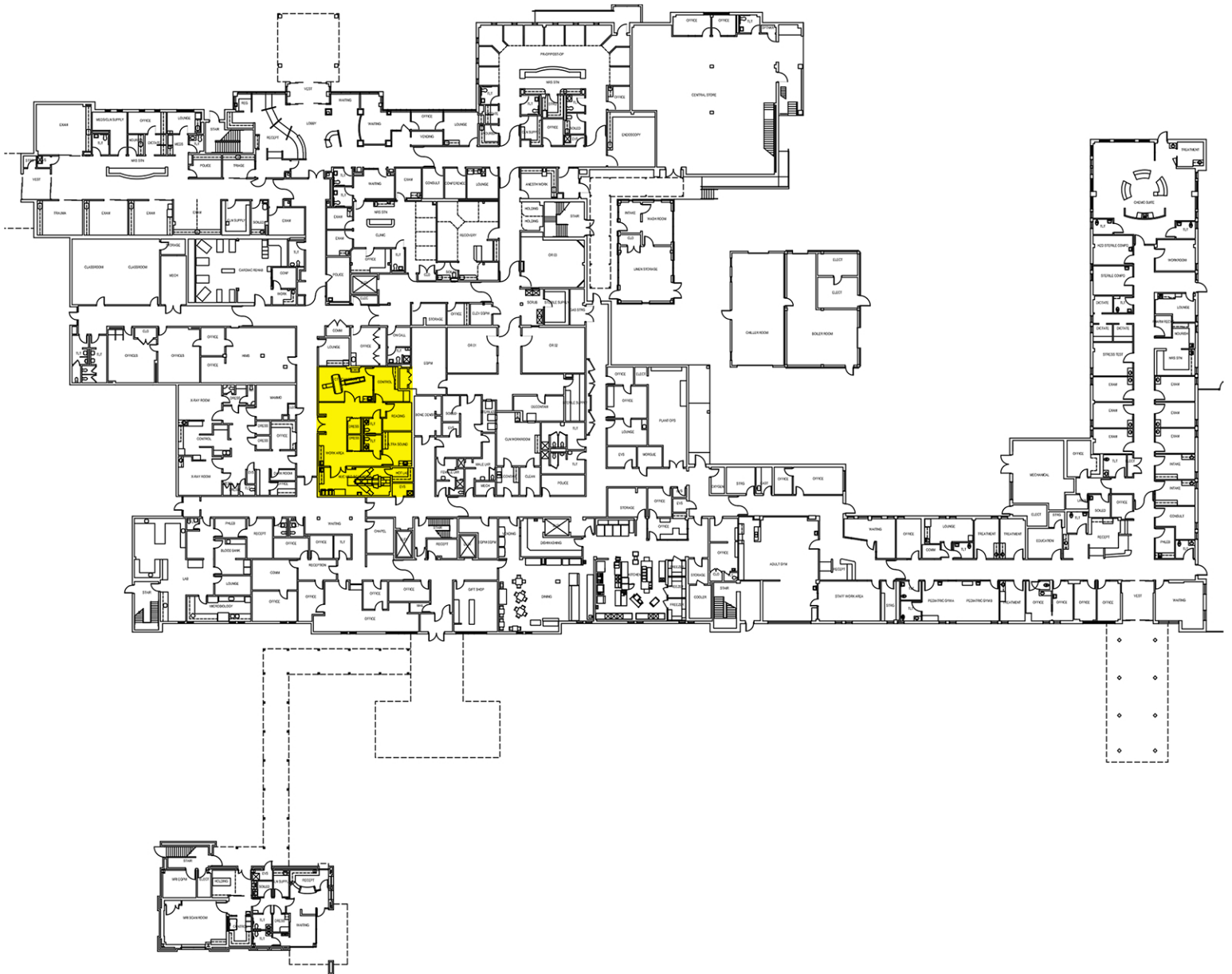*optional

Disclaimers and References

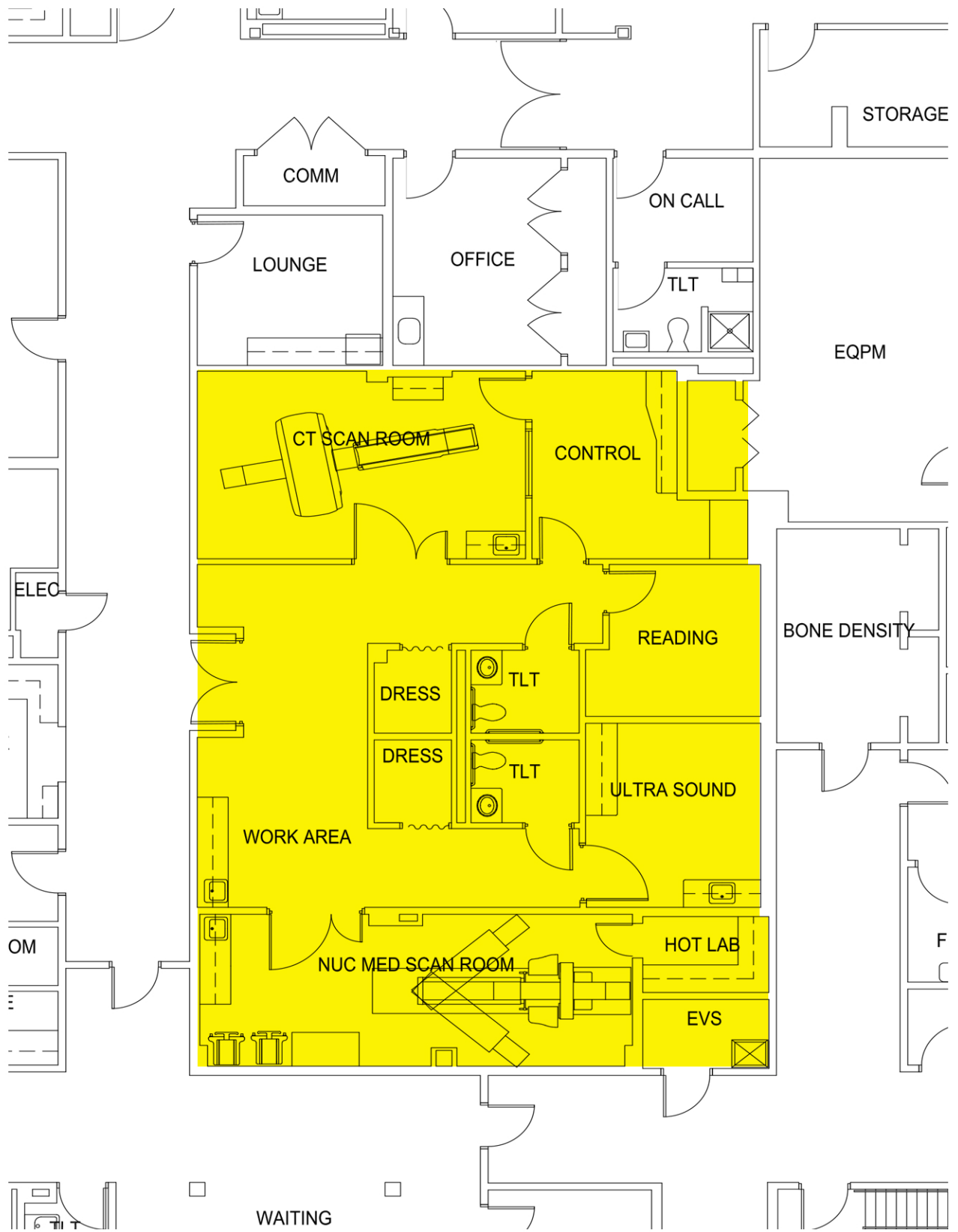| 1	**NM/CT 830, 850, 860, 870 DR Dose/Time Reduction:** Compared to using the LEHR collimator with SPECT Step & Shoot scan mode (for SPECT)/without Planar Clarity 2D (for Planar). As demonstrated in phantom testing using a bone scan protocol, Evolution processing (for SPECT), and a model observer. Because model observer results may not always match those from a human reader, the actual time/dose reduction depends on the clinical task, patient size, anatomical location and clinical practice. A radiologist should determine the appropriate scan time/dose for the particular clinical task. **NM/CT 870 CZT Dose/Time Reduction:** Together with WEHR collimator, Clarity 2D and Evolution and compared to Discovery NM/CT 670 Pro/ES/DR without Clarity 2D and Evolution. As demonstrated in phantom testing using a bone scan protocol, and the NEMA IEC Body Phantom. The actual time/dose reduction depends on the clinical task, patient size, anatomical location and clinical practice.
2	Compared to LEHR collimator, with SPECT Step & Shoot scan mode (for SPECT)/without Planar Clarity 2D (for Planar). As demonstrated in phantom testing using a model observer.
3	In clinical practice, Evolution options[5a] (Evolution for Bone, Evolution for Cardiac, Evolution for Bone Planar) and Evolution Toolkit[5b] are recommended for use following consultation of a NM physician, physicist and/or application specialist to determine the appropriate dose or scan time reduction to obtain diagnostic image quality for a particular clinical task, depending on the protocol adopted by the clinical site. • Evolution Options - Evolution claims are supported by simulation of count statistics using default factory protocols and imaging of 99mTc based radiotracers with LEHR collimator on anthropomorphic phantom or realistic NCAT –SIMSET phantom followed by quantitative and qualitative images comparison. • Evolution Toolkit - Evolution Toolkit claims are supported by simulation of full count statistics using lesion simulation phantom images based on various radiotracers and collimators and by showing that SPECT image quality reconstructed with Evolution Toolkit provide equivalent clinical information but have better signal-to-noise, contrast, and lesion resolution compared to the images reconstructed with FBP/OSEM.
4	Together with Evolution. Demonstrated in phantom testing using a bone scan protocol, and the NEMA IEC Body Phantom. The actual time/dose reduction depends on the clinical task, patient size, anatomical location and clinical practice.
5	Demonstrated in phantom testing using NEMA IEC Body Phantom at 50% scan times with Evolution[3] on Discovery NM/CT 670 CZT with WEHR collimator. Compared to D670Pro/ES/DR.
6	ASiR • In clinical practice, the use of ASiR may reduce CT patient dose depending on the clinical task, patient size, anatomical location and clinical practice. A consultation with a radiologist and a physicist should be made to determine the appropriate dose to obtain diagnostic image quality for the clinical task • In clinical practice, the actual level of LCD improvement may vary. Consult with a radiologist and a physicist.
7	a. Measured with 20% window using relevant isotope for each collimator, with ±10% tolerance b. Measured at 100 mm distance from collimator face with ±4% tolerance c. Measured according to NEMA NU-1 2001, Clarity 2D 40%
8	Medrayintell- http://www.medraysintell.com/
9	https://www.cancer.net/cancer-types/prostate-cancer/statistics
10	https://clinicaltrials.gov/ct2/results?cond=&term=PSMA&cntry=&state=&city=&dist=
11	https://epi.grants.cancer.gov/global-health/
12	30. https://www.cancer.org/cancer/prostate-cancer/about/key-statistics.html
13	SmartMAR Whitepaper DOC1381482.pdf
14	Two decades of SPECT/CT –the coming of age of a technology: An updated review of literature evidence.https://link.springer.com/article/10.1007/s00259-019-04404-6

Appendix E

Site and Floor Plan

ECU Health Chowan Hospital
Floor Plan - Level 01
CT & Nuclear Medicine Suite Renovation

STORAGE

COMM

ON CALL

LOUNGE

OFFICE

TLT

EQPM

CT SCAN ROOM

CONTROL

ELEC

READING

BONE DENSITY

DRESS

TLT

DRESS

TLT

ULTRA SOUND

WORK AREA

OM

HOT LAB

NUC MED SCAN ROOM

F

EVS

WAITING

ECU Health Chowan Hospital
Floor Plan - Level 01
CT & Nuclear Medicine Suite Renovation

From:	Waller, Martha K
To:	Stancil, Tiffany C
Cc:	Samuel.Lentz@ecuhealth.org; Shovelin, Jeffrey
Subject:	FW: [External] ECU Health Letters of No Review (Email #1)
Date:	Thursday, September 26, 2024 9:59:51 AM
Attachments:	ECU Health Chowan CT Replacement - Final Submission Packet.pdf
	ECU Health Chowan NM Cam. Replacement - Final Submission.pdf
	image001.png

Morning Sam/Jeff,

I am just returning to office, and apologize your request is being forwarded a little delayed. To help in the future, you are welcome to include me, but not necessary, if you would send them in to Tiffany, addressed in this Forward. She will get them logged in and processed to the appropriate Analyst for completion. Thanks for your understanding, and they are moving forward.

Tiffany, this is 1 OF 3 emails, with Attachments for several, separate requests...

Martha Waller

Administrative Specialist 1

Division of Health Service Regulation, Certificate of Need Section North Carolina Department of Health and Human Services
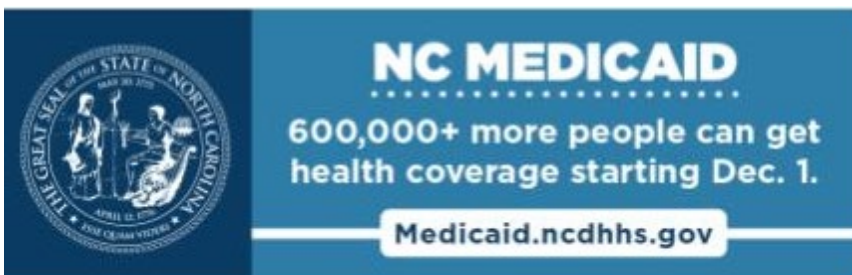
Main: 919-855-3873
Office: 919-855-3885
martha.waller@dhhs.nc.gov

2704 Mail Service Center
Raleigh, NC 27699-2704

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From: Lentz, Samuel <Samuel.Lentz@ecuhealth.org>
Sent: Tuesday, September 24, 2024 1:45 PM
To: Waller, Martha K <martha.waller@dhhs.nc.gov>
Cc: Shovelin, Jeffrey <JShoveli@ecuhealth.org>
Subject: [External] ECU Health Letters of No Review (Email #1)

> You don't often get email from samuel.lentz@ecuhealth.org. Learn why this is important
>
> **CAUTION:** External email. Do not click links or open attachments unless verified. Report suspicious emails with the Report Message button located on your Outlook menu bar on the Home tab.

Ms. Waller,

Attached are 2 of 5 Letter of No Review requests (sorry!). This email includes letters for the following projects:

- ECU Health Chowan CT Replacement
- ECU Health Chowan Nuclear Medicine Camera Replacement

Please confirm receipt and let us know if anything else is needed. My apologies for the multiple emails!

Thank you!

-Sam