MIRION Connect AMERICAS 26

Annual Users' Conference

ADVANCING RADIATION SAFETY. EMPOWERING PROGRESS.

M Resort, Henderson, NV | June 15 – June 18

MIRION TECHNOLOGIES

Advancing Radiation Safety.
Empowering Progress.

From Measurement to Meaning

Building Accurate, Standardized Personalized RPTs

Carlos Uribe, PhD, MCCPM

Molecular Imaging and Therapy Physics Lead, BC Cancer

Mirion Connect | Annual Users' Conference 2026

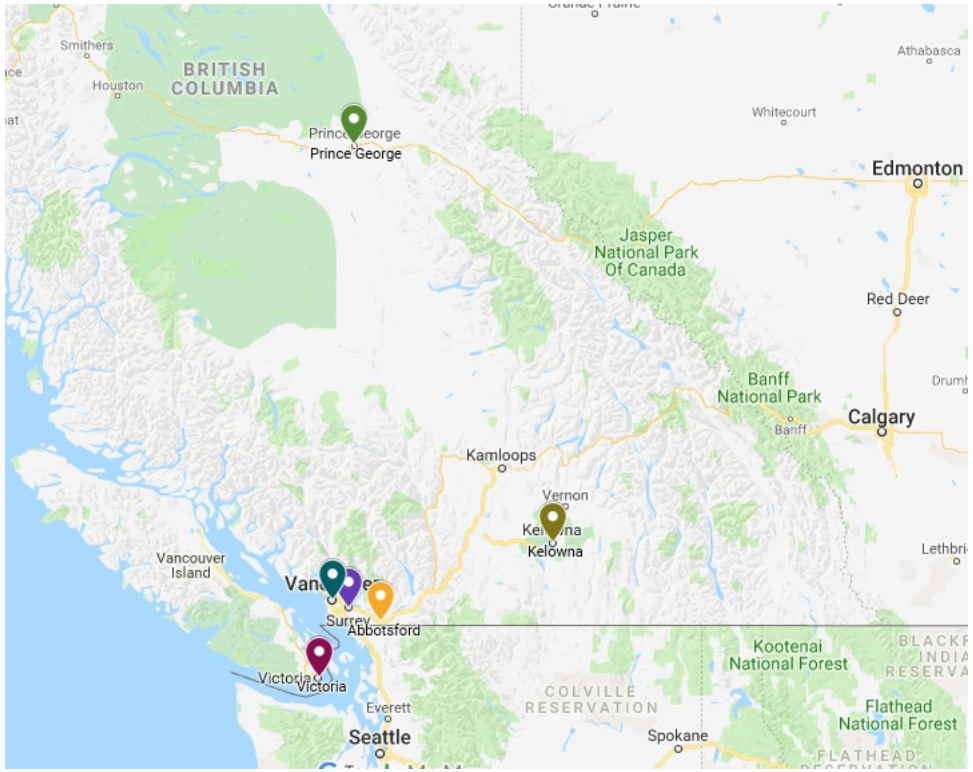
Henderson, NV

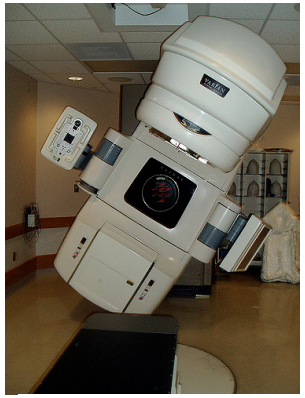
MIRION Connect 26 AMERICAS
Annual Users' Conference

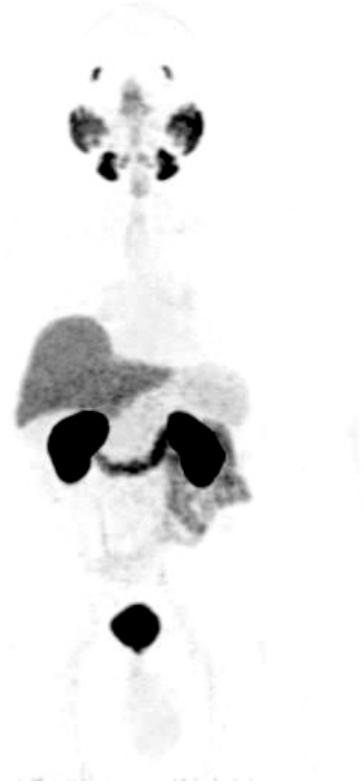
Advancing Radiation Safety.
Empowering Progress.

Where I come from…

BC Cancer







Carlos Uribe, PhD, MCCPM

MIRION Connect 26 AMERICAS
Annual Users' Conference

Advancing Radiation Safety.
Empowering Progress.

Research Locations

Genomics

Drug Delivery

Deeley Research Centre
- Victoria

BC Cancer Research Centre
- Vancouver

Stem Cells

Immunology

Medical Imaging
Radiation Therapy

Carlos Uribe, PhD, MCCPM

Advancing Radiation Safety.
Empowering Progress.

Molecular Imaging and Therapy

- *Multidisciplinary team*
  - *NM Physicians*
  - *NM Physicists*
  - *NM Technologists*
  - *Radiochemists*
  - *Biologists*
  - *Computer Scientists*

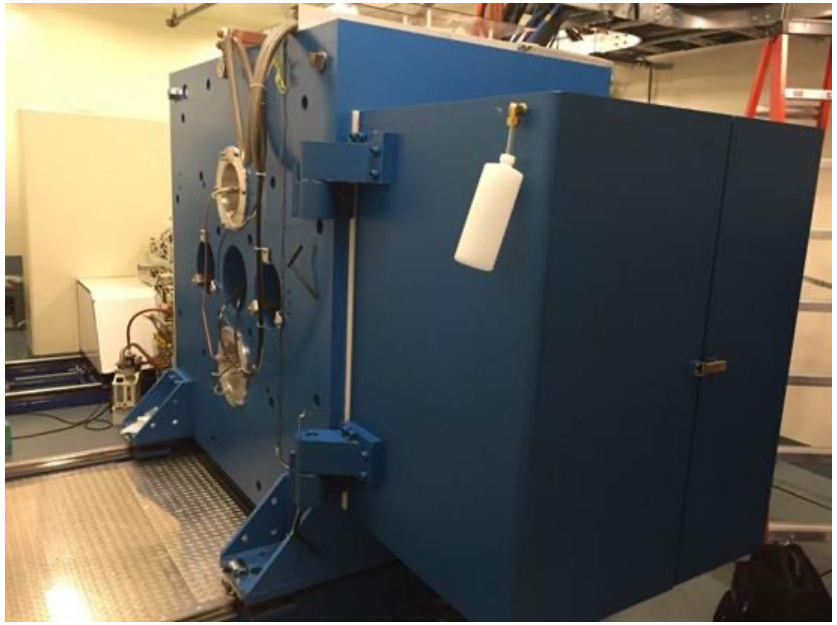
  - *Graduate Students*
  - *Postdoctoral Fellows*

Molecular Imaging and Therapy

Carlos Uribe, PhD, MCCPM

Advancing Radiation Safety.
Empowering Progress.

Molecular Imaging and Therapy

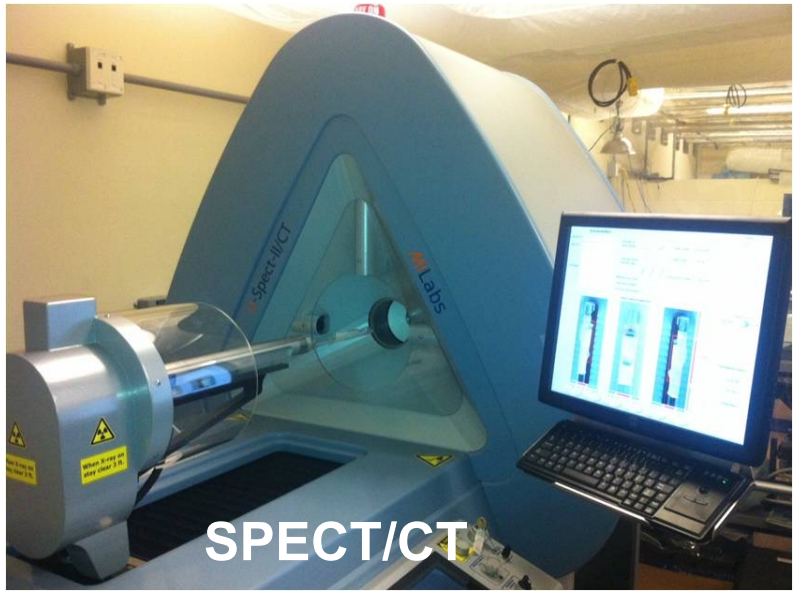


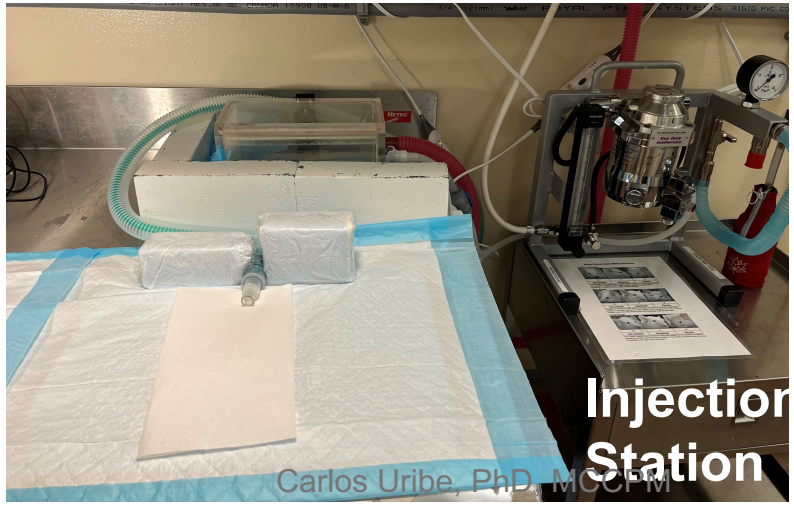
TR19 cyclotron
(ACSI, Richmond, BC)

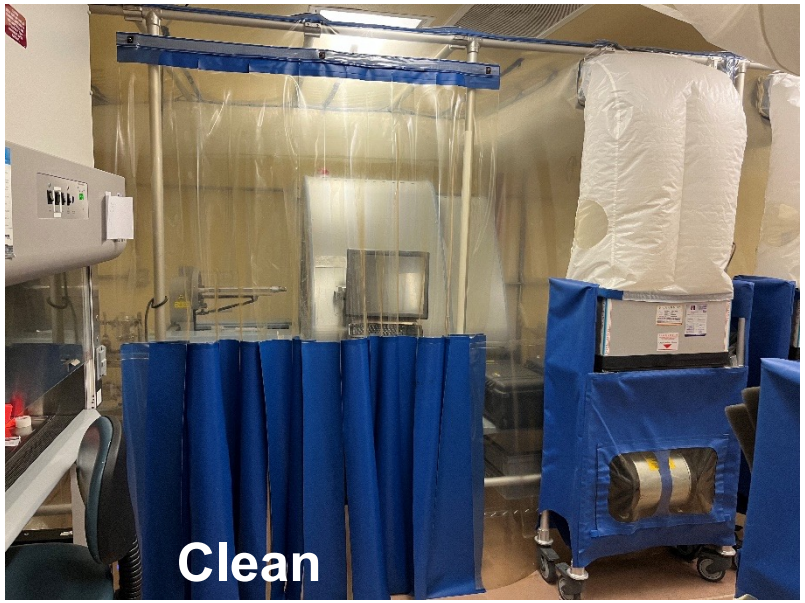
Two PET/CT Scanners

- GE DMI 5 Ring
- Siemens Vision Quadra

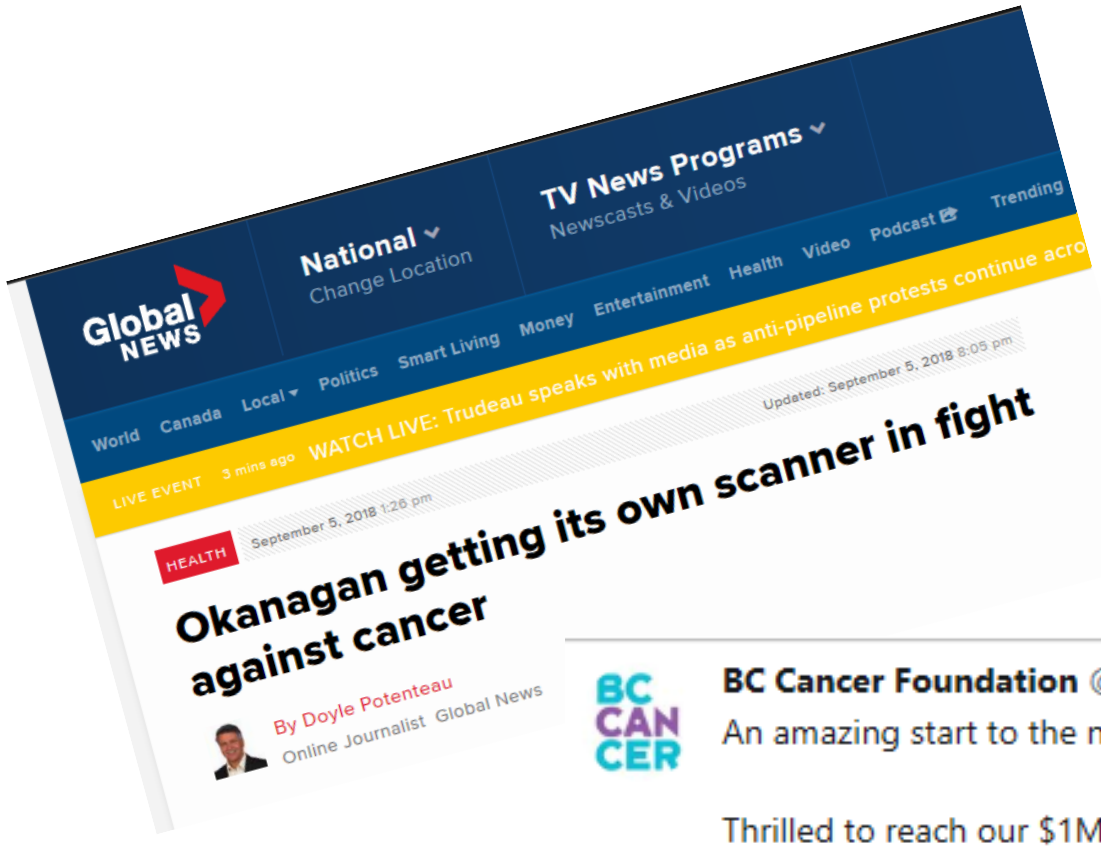
Small Animal Imaging Resource







The Theranostics Expansion



Carlos Uribe, PhD, MCCPM

Advancing Radiation Safety. Empowering Progress.

The Theranostics Expansion

CBC | MENU

news Top Stories Local The National Opinion World Canada Politic

British Columbia

Justin Trudeau announces funding to build nuclear medicine hub in Vancouver

PM says initiative will help Canada stay a leader in medical isotope research

The Canadian Press · Posted: Nov 01, 2018 5:51 PM PT | Last Updated: November 1, 2018

JUSTIN TRUDEAU, PRIME MINISTER OF CANADA

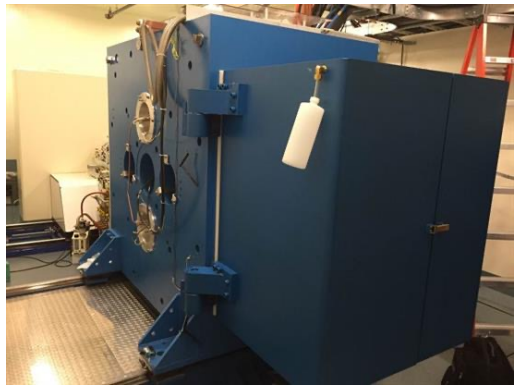
NEWS PHOTOS & VIDEOS

New home for nuclear medicine at the University of British Columbia

News » New home for nuclear medicine at the University of British Columbia

IAMI

Molecular Imaging and Therapy

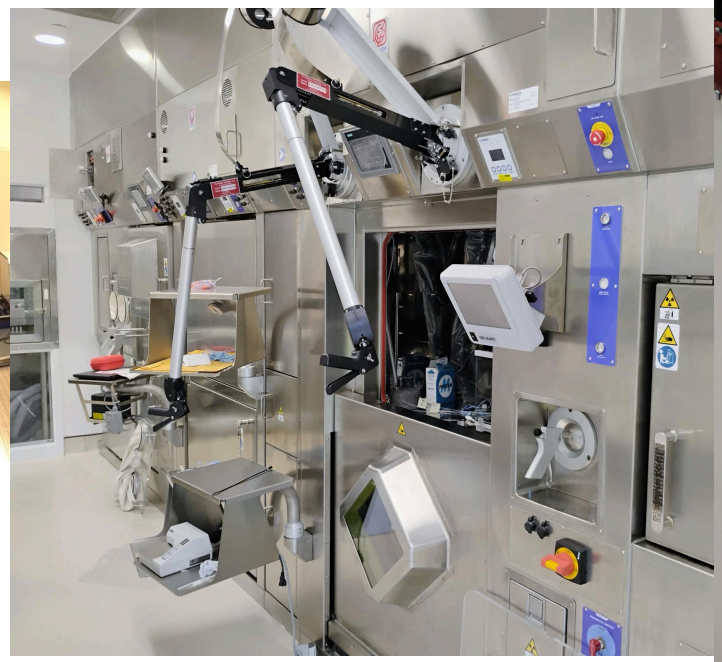


3 Radiopharmacies
3 Cyclotrons

~~Two~~ Nine PET/CT Scanners

- GE DMI 5 Ring
- Siemens Vision Quadra
- …

Molecular Imaging and Therapy

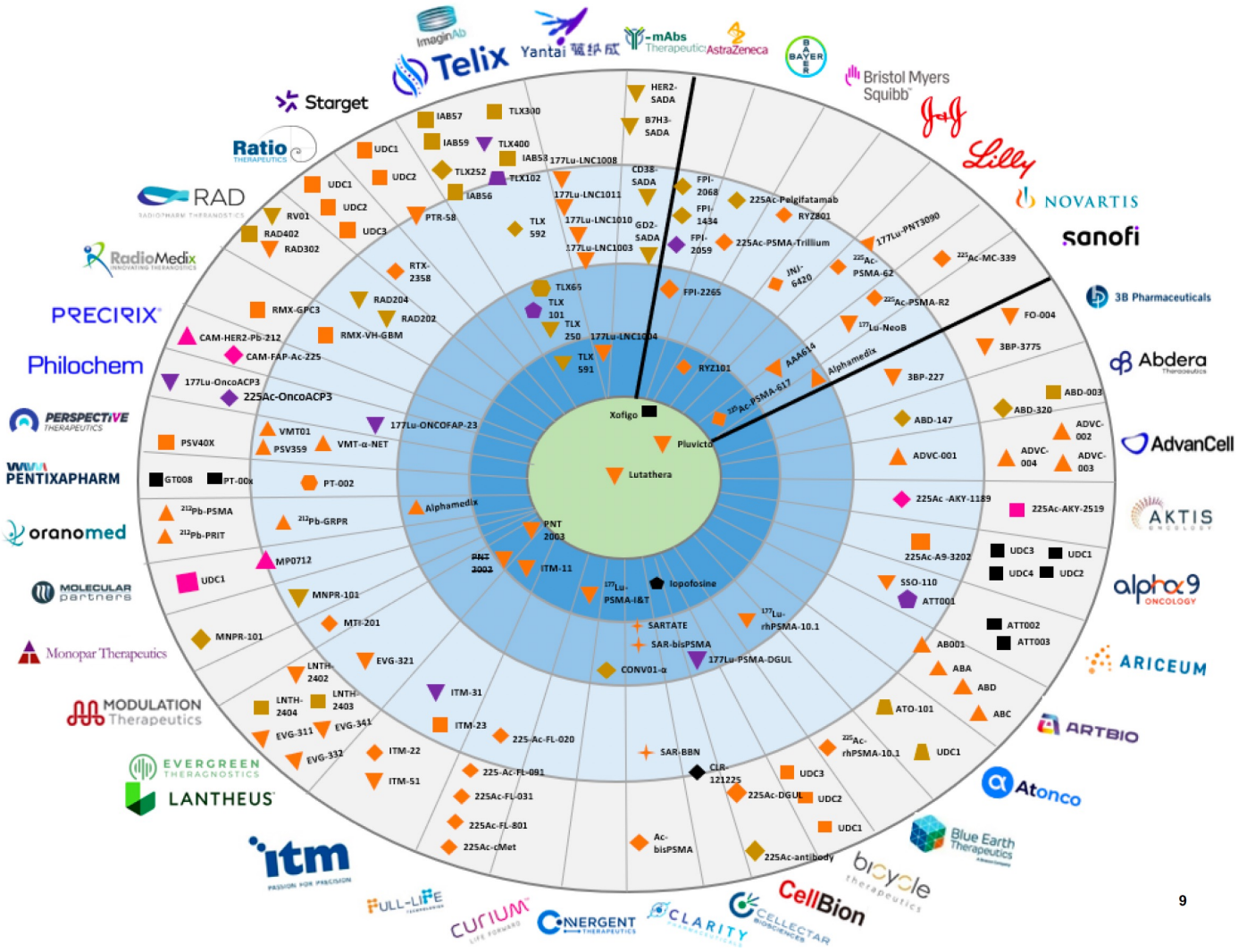


3 Radiopharmacies
3 Cyclotrons

~~Two~~ Nine PET/CT Scanners

- GE DMI 5 Ring
- Siemens Vision Quadra
- …

Molecular Imaging and Therapy



	^{177}Lu	^{225}Ac	^{212}Pb	^{121,123,131}I	^{67}Cu	^{90}Y	UDC
Peptide / Ligand	▼	◆	▲	⬟	+	⬢	■
Antibody	▼	◆	▲	⬟	+	⬢	■
Small Molecule	▼	◆	▲	⬟	+	⬢	■
Mini Proteins	▼	◆	▲	⬟	+	⬢	■
UDC	▼	◆	▲	⬟	+	⬢	■

UDC: Undisclosed.
Source: Oppenheimer & Co. Research

9

Carlos Uribe, PhD, MCCPM

Advancing Radiation Safety. Empowering Progress.

Molecular Imaging and Therapy

SNMMI/ACNM Procedure Standard for Post-Treatment Imaging of ^{177}Lu-based Radiopharmaceuticals

Carlos Uribe[1,2,3], Amir Iravani[4], Bital Savir-Baruch[5], Heather Jacene[6], Stephen A. Graves[7,8,9], Yuni K Dewaraja[10], Courtney Lawhn Heath[11], Thomas A. Hope[12]

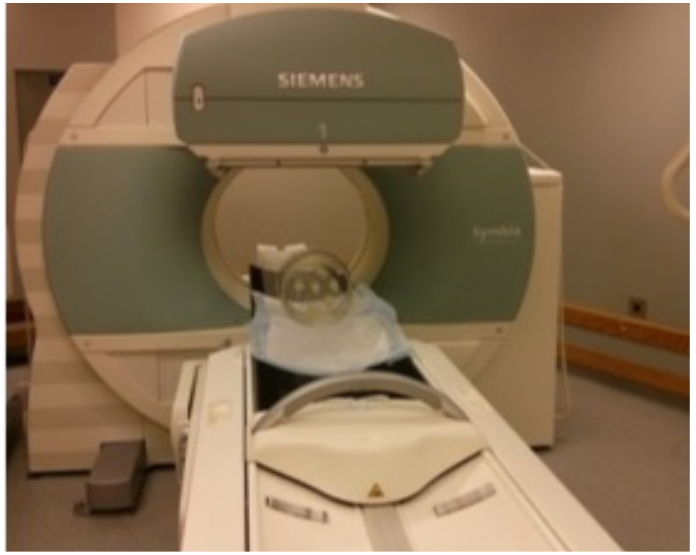
Research Article | Procedure Standard

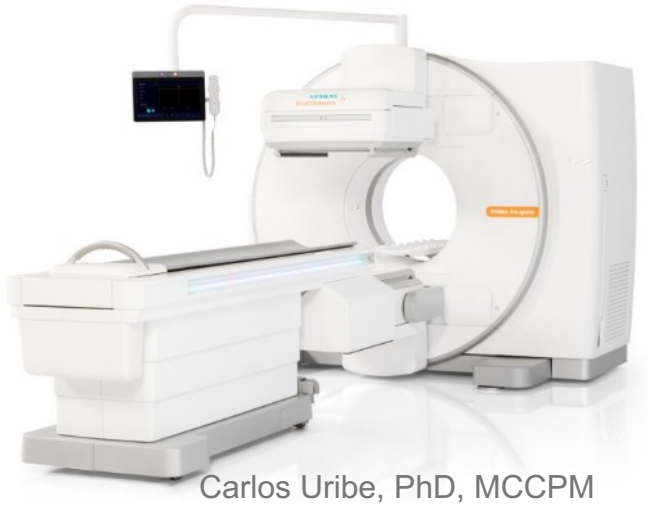
Summary: SNMMI/ACNM Procedure Standard for Posttreatment Imaging of ^{177}Lu-Based Radiopharmaceuticals

Carlos Uribe, Amir Iravani, Bital Savir-Baruch, Heather Jacene, Stephen A. Graves, Yuni K. Dewaraja, Courtney Lawhn Heath and Thomas A. Hope

Journal of Nuclear Medicine October 2025, 66 (10) 1528-1537; DOI: https://doi.org/10.2967/jnumed.125.270979

Molecular Imaging and Therapy





Carlos Uribe, PhD, MCCPM

Advancing Radiation Safety.
Empowering Progress.

BC Cancer & My Role

BC CANCER

- *A provincial cancer agency serving all of British Columbia*
- *Molecular Imaging and Therapy program: a provincial program translating new radiopharmaceuticals from discovery to first-in-human*
- *Province-wide clinical nuclear medicine physics*

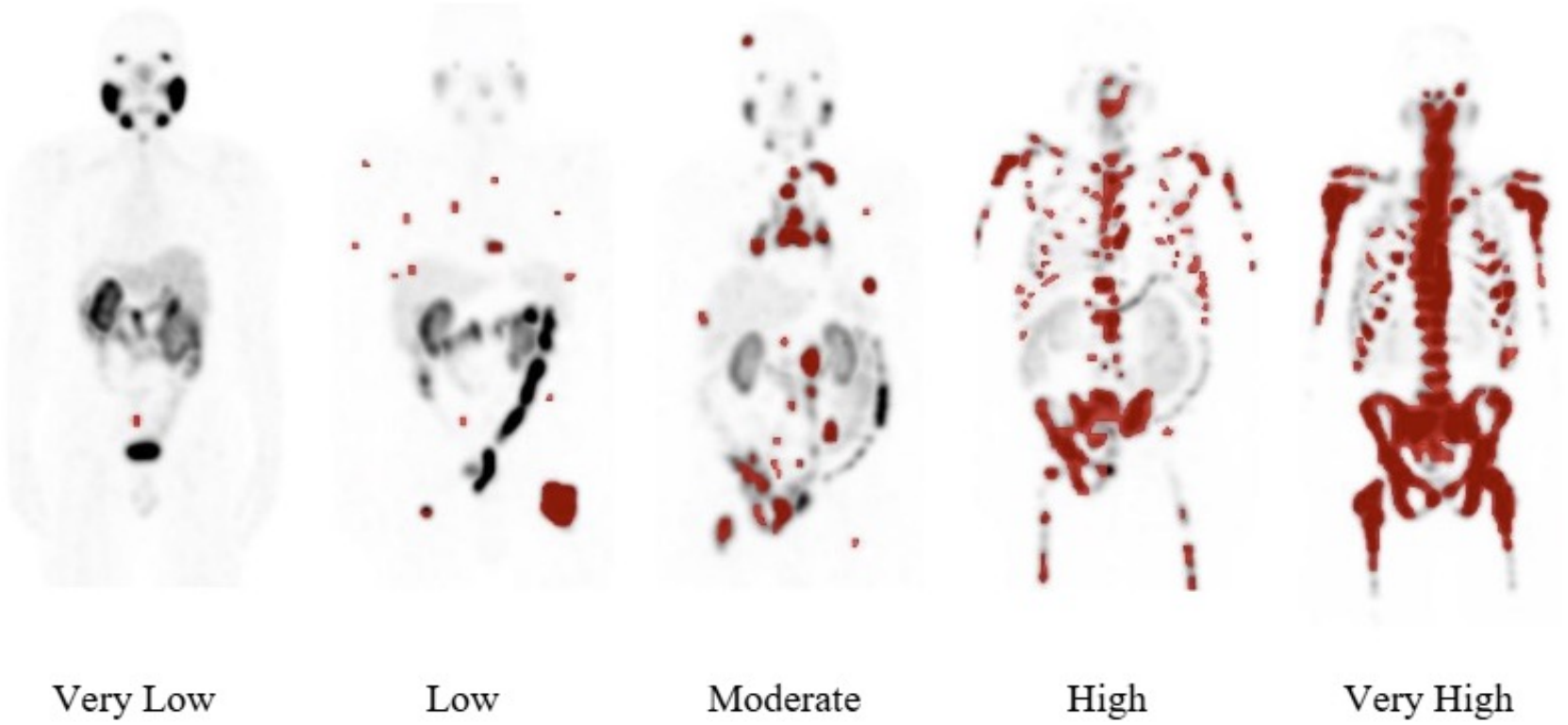
MY ROLE

- *Leader, Clinical Nuclear Medicine Physics (Provincial Operations)*
- *Co-lead, Qurit research program*
- *Member, MIRD Committee and SNMMI Dosimetry Task Force*
- *Led the SNMMI 177Lu Dosimetry Challenge*
- *Chair of the SNMMI Clinical Trial Network Scanner Validation committee*

The RPT problem…

Same administered activity

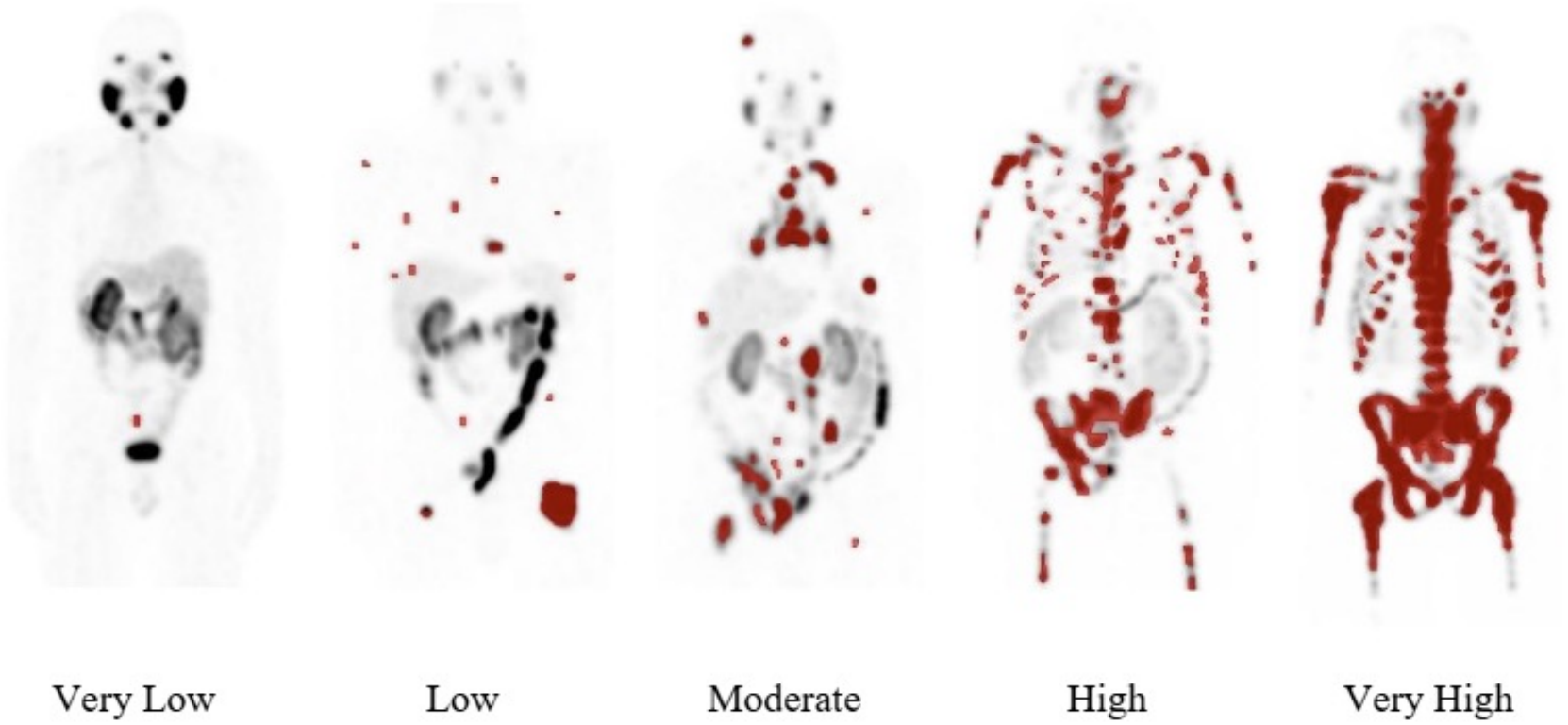
7.4 GBq
(200 mCi)



Tumor load	Very Low	Low	Moderate	High	Very High

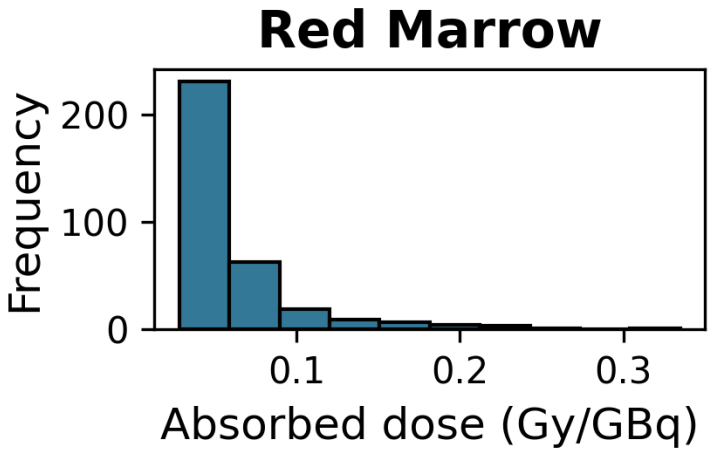
Same administered activity

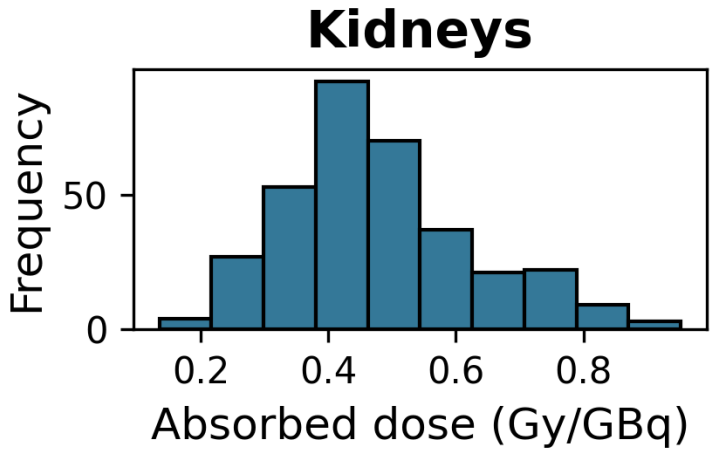
7.4 GBq (200 mCi)

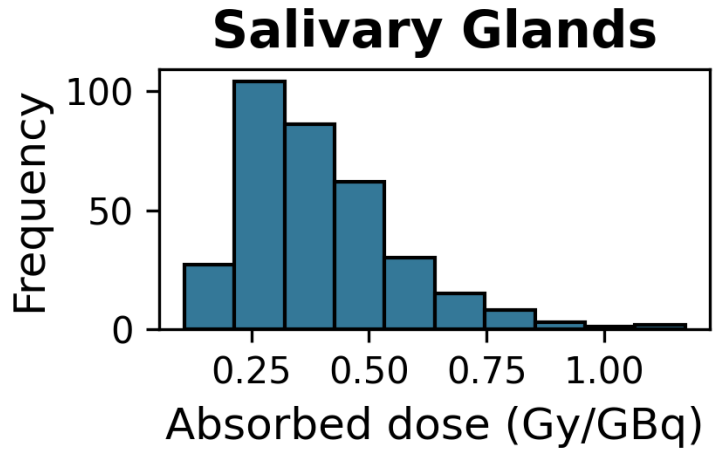


But uptake, retention, clearance, tumor burden, and organ risk are patient-specific.

Same administered activity…different absorbed dose





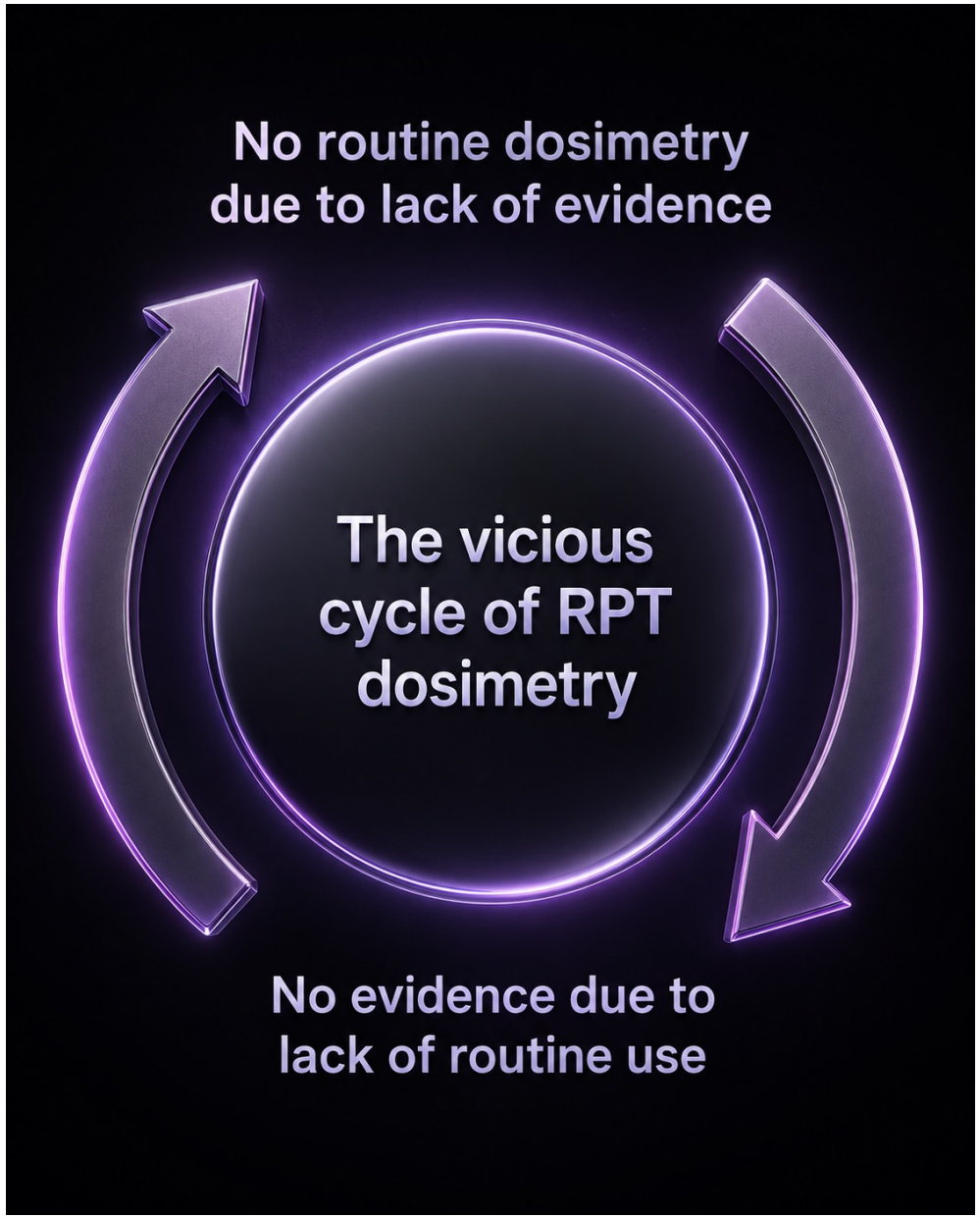


But uptake, retention, clearance, tumor burden, and organ risk are patient-specific.

Carlos Uribe, PhD, MCCPM

Rethinking Dosimetry: A European Perspective

Johannes Tran-Gia[1], Francesco Cicone[2], Michel Koole[3], Francesco Giammarile[4,5], Jonathan Gear[6], Emmanuel Deshayes[7,8], Pablo Minguez Gabiña[9,10], Marta Cremonesi[11], Jonathan Wadsley[12], Peter Bernhardt[13], Manuel Bardiès[7,8], Silvano Gnesin[14], Mattias Sandström[15], Ulrike Garske-Román[16,17], Mona-Elisabeth R. Revheim[18,19], Frederik A. Verburg[20], Mark Konijnenberg[20], Bernd Joachim Krause[21], Michael Lassmann[1], and Caroline Stokke[22,23]

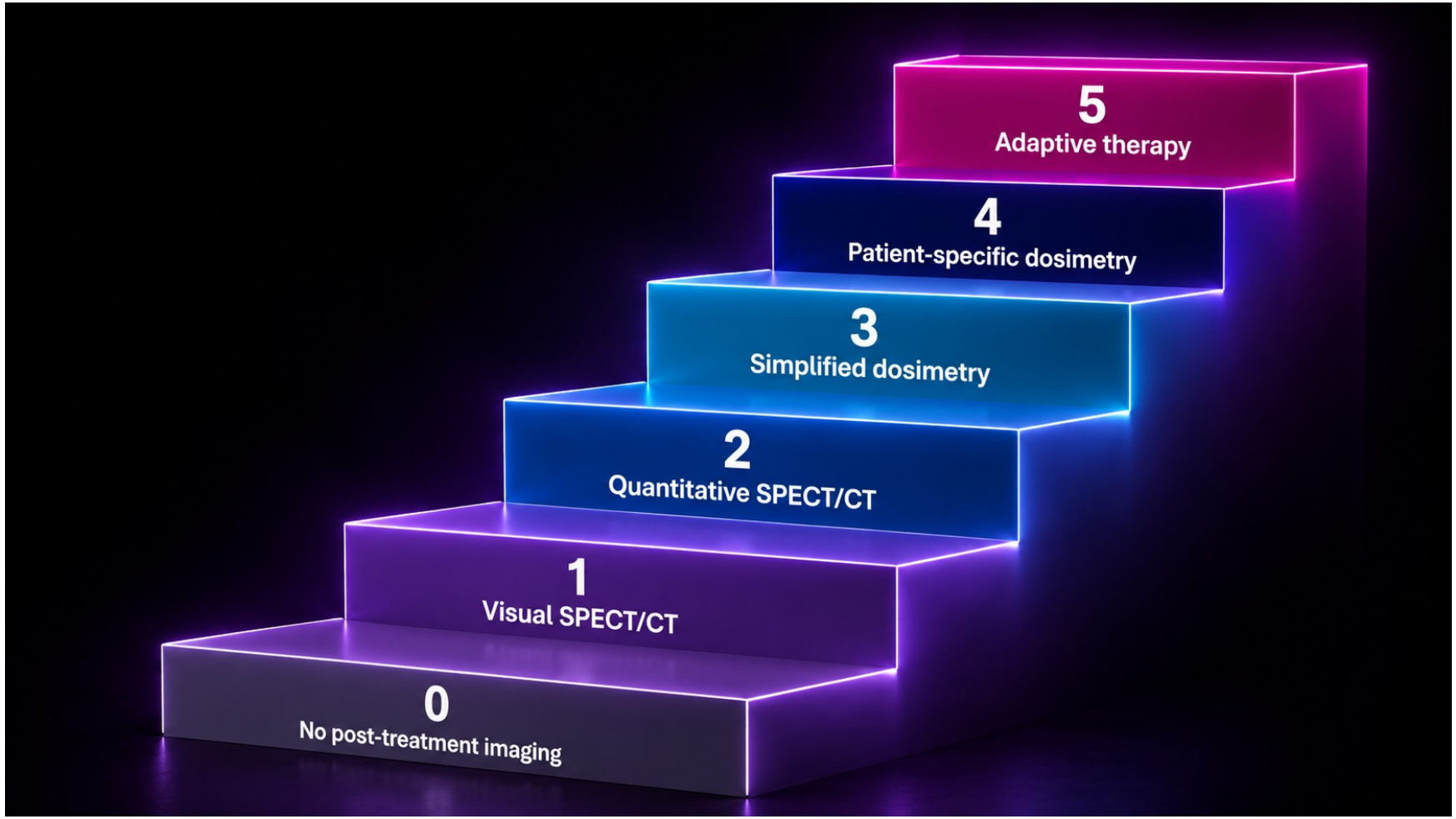


Dosimetry is a staircase, not an on/off switch

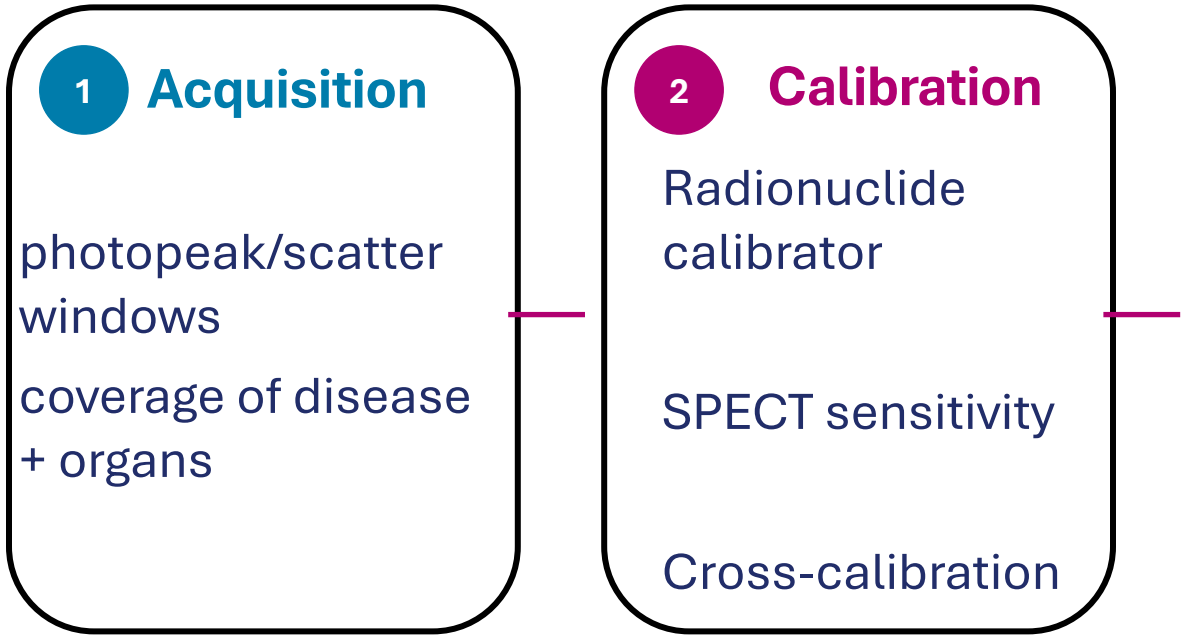
Start where the clinical workflow can support it. Build toward adaptive therapy.

Dosimetry is a staircase, not an on/off switch

Start where the clinical workflow can support it. Build toward adaptive therapy.



Quantitative SPECT/CT is the foundation for dosimetry

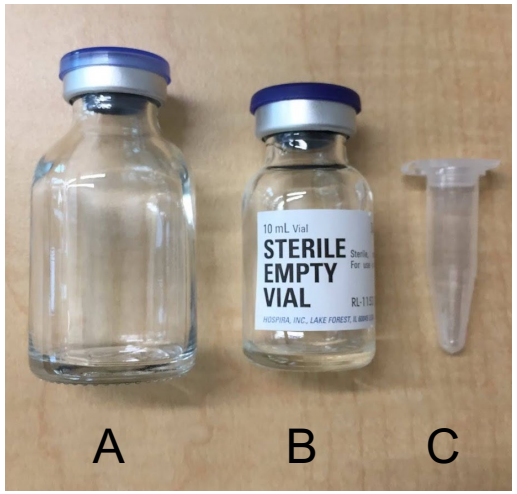


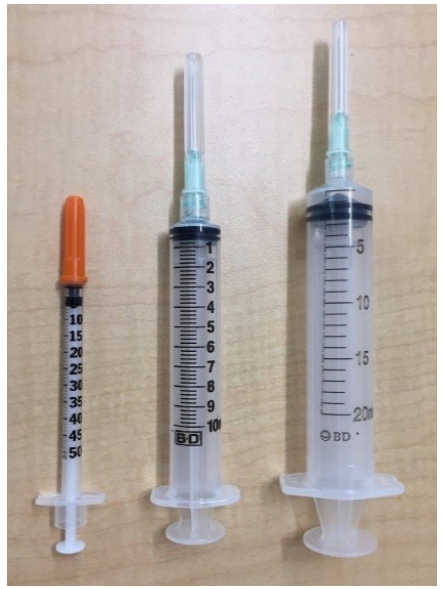
Radionuclide calibrator

Necessary to:

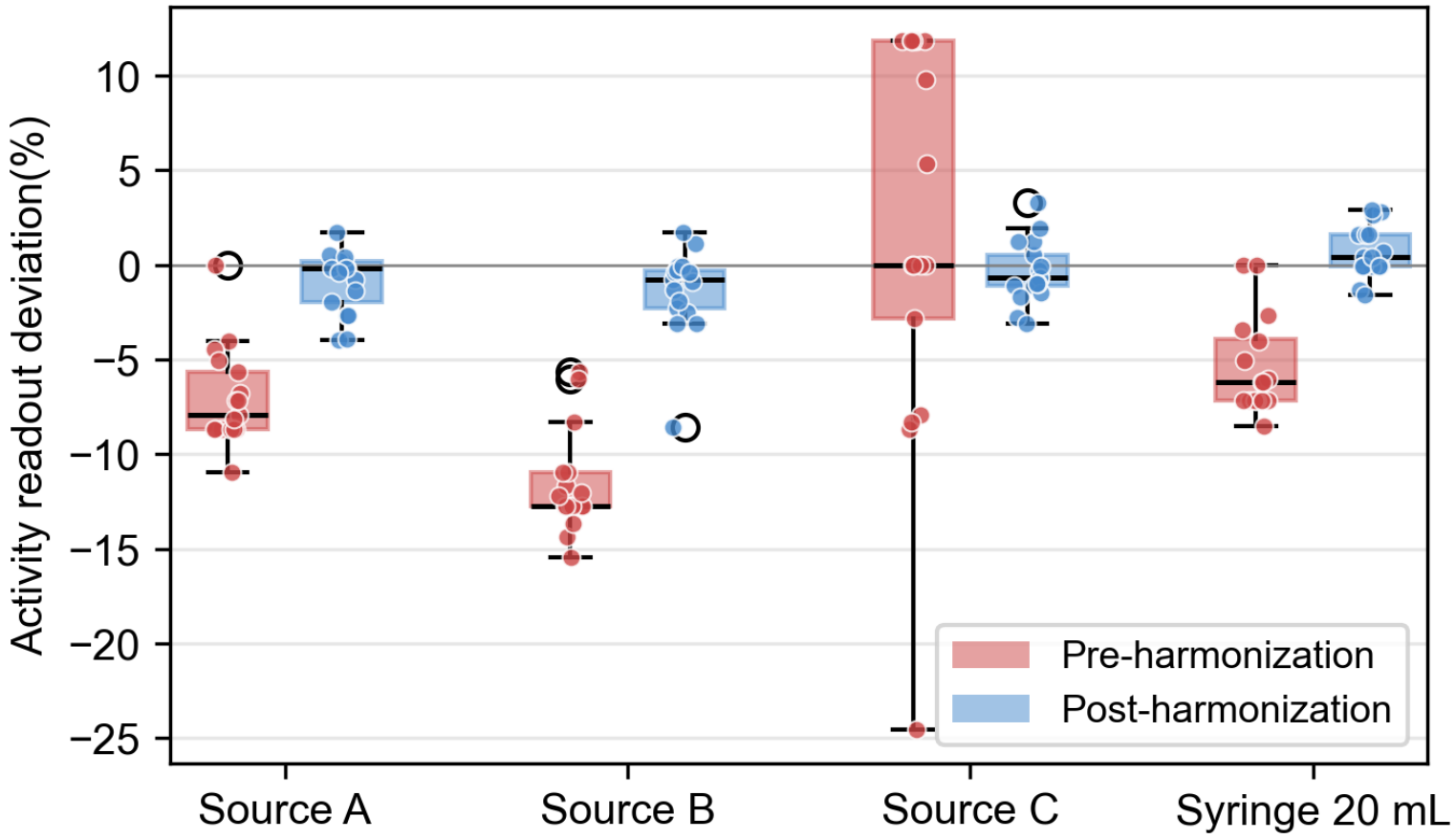
- Accurately measure how much activity is injected to the patient
- Cross calibrate with SPECT scanners to generate quantitative images.

Different source geometries





Radionuclide calibrator



Carlos Uribe, PhD, MCCPM

Advancing Radiation Safety. Empowering Progress.

Quantitative SPECT

SPECIAL CONTRIBUTIONS

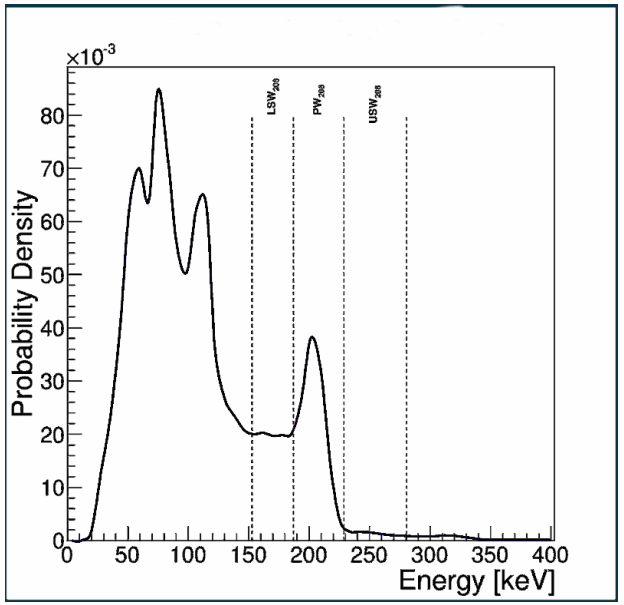
MIRD Pamphlet No. 26: Joint EANM/MIRD Guidelines for Quantitative ^{177}Lu SPECT Applied for Dosimetry of Radiopharmaceutical Therapy

Michael Ljungberg[1], Anna Celler[2], Mark W. Konijnenberg[3], Keith F. Eckerman[4], Yuni K. Dewaraja[5], and Katarina Sjögreen-Gleisner[1]

In collaboration with the SNMMI MIRD Committee: Wesley E. Bolch, A. Bertrand Brill, Frederic Fahey, Darrell R. Fisher, Robert Hobbs, Roger W. Howell, Ruby F. Meredith, George Sgouros, and Pat Zanzonico, and the EANM Dosimetry Committee: Klaus Bacher, Carlo Chiesa, Glenn Flux, Michael Lassmann, Lidia Strigari, and Stephan Walrand.

[1]Department of Medical Radiation Physics, Lund University, Lund, Sweden; [2]Radiology Department, Medical Imaging Research Group, University of British Columbia, Vancouver, Canada; [3]Department of Nuclear Medicine, Erasmus University Medical Center, Rotterdam, Holland; [4]Easterly Scientific, Knoxville, Tennessee; and [5]Department of Radiology, University of Michigan Medical School, Ann Arbor, Michigan

Photopeak window	208 @20% [187.2 – 228.8] keV
Low scatter window	10% [166.4 – 187.2] keV
Upper scatter window	10% [228.8 – 249.6] keV



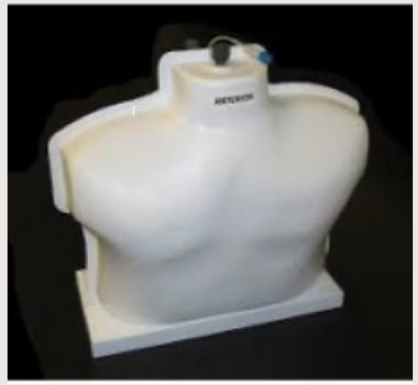
Quantitative SPECT

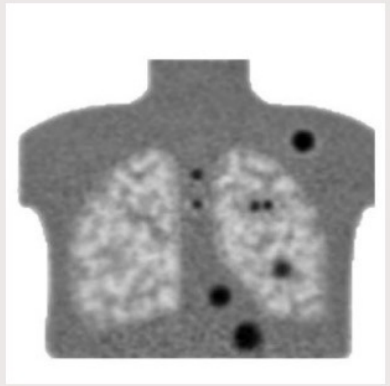
SOCIETY OF NUCLEAR MEDICINE AND MOLECULAR IMAGING

CLINICAL TRIALS NETWORK

CTN works collaboratively with SNMMI Councils and Chapters as well as with external groups to move the entire field forward. In working with other imaging associations such as RSNA, government agencies such as the FDA and industry leaders, the CTN envisions having a key role in advancing the use of radiopharmaceuticals and optimizing the use of molecular imaging in clinical trials and for dissemination into clinical practice.

PET/CT Scanner Validation



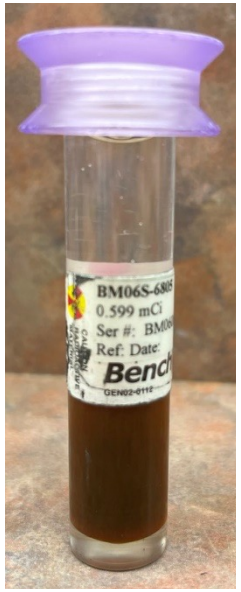


A successful scanner validation will ensure that your study patients as well as your clinical patients are being scanned on a qualitatively and quantitatively accurate PET/CT. Contact ctnadmin@snmmi.org for more info.

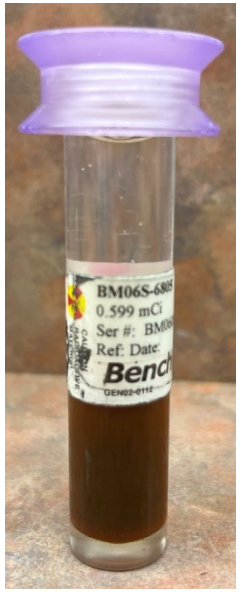
SPECT/CT Scanner Calibration

A successful radionuclide-specific SPECT/CT scanner calibration will allow conversion of the SPECT measured counts/voxel into a true radionuclide concentration measurement (Bq/ml) for accurate dosimetry measurements. Contact ctnadmin@snmmi.org for more info.

But there’s a problem in the measurement chain



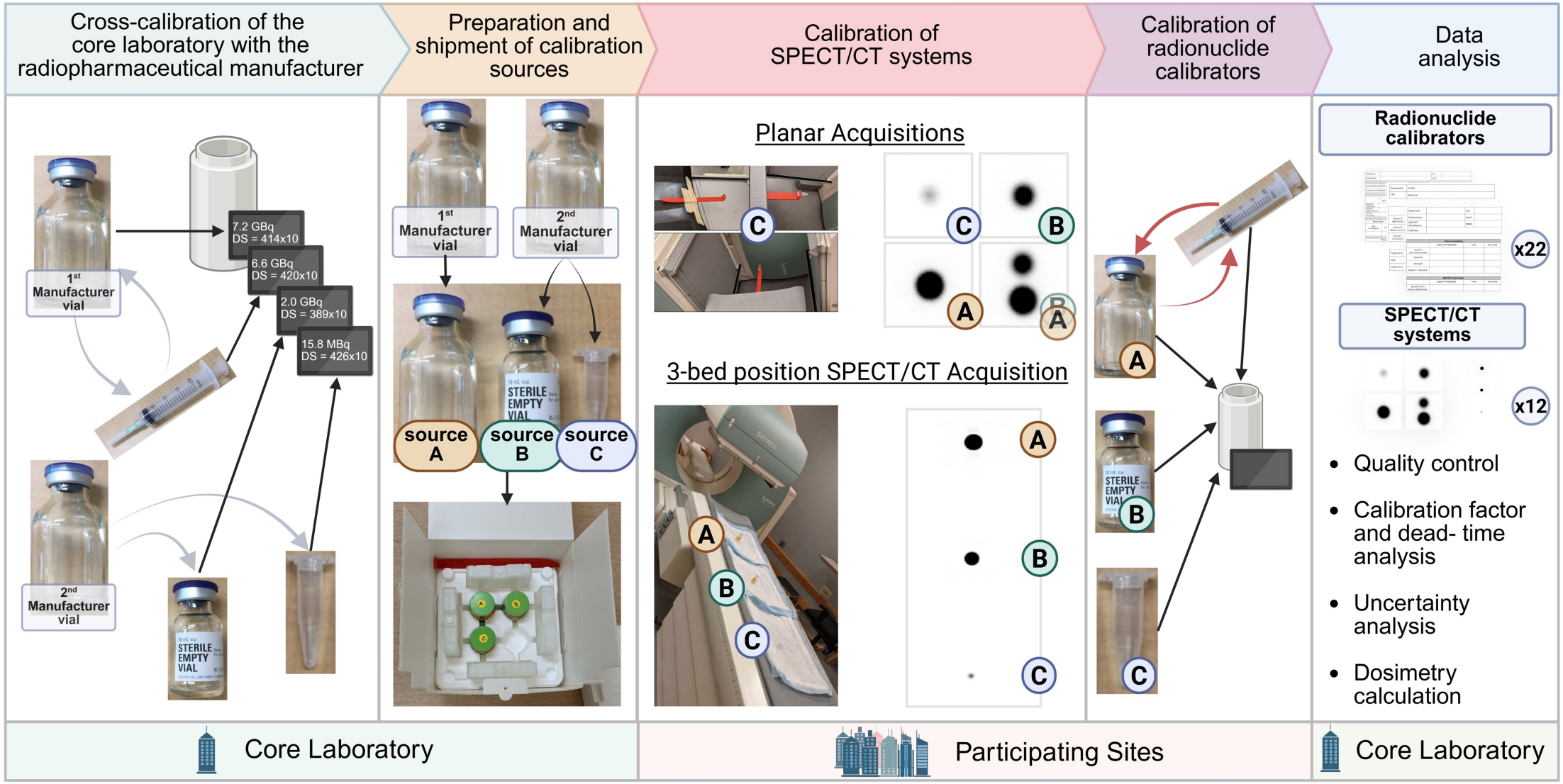
But there's a problem in the measurement chain



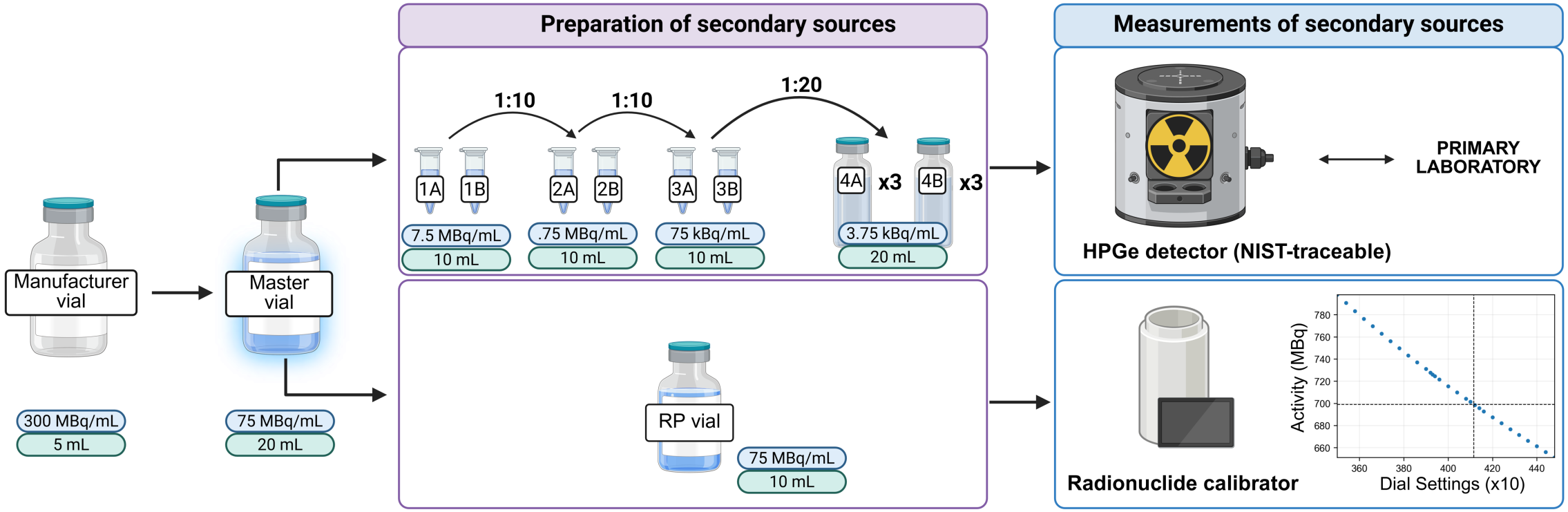
Lu-177
I-131
Ac-225
In-111
Pb-203
Pb-212
…

?

But there's a problem in the measurement chain



But there's a problem in the measurement chain



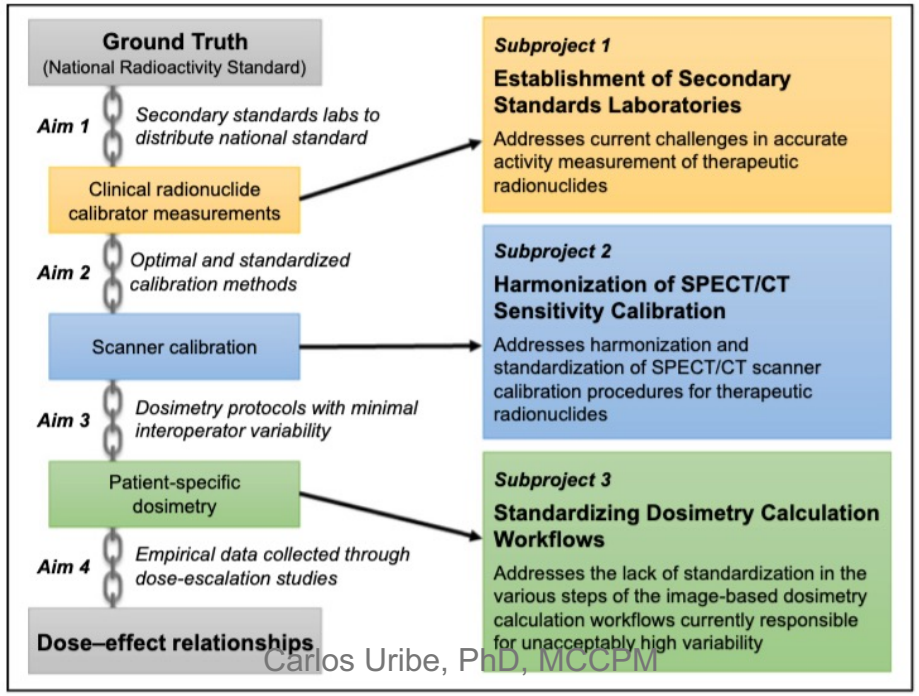
The PDIB Project

Journal of Nuclear Medicine, published on April 2, 2026 as doi:10.2967/jnumed.125.271665

EDITORIAL

Pulling Together: A 5-Year Plan to Improve Theranostic Outcomes by Improving the Accuracy of Dosimetry—An FNIH Joint Academic, Clinical, and Industrial Collaboration

Dale L. Bailey[1], John C. Dickson[2], Suzanne E. Lapi[3], Carlos Uribe[4], Clarita Saldarriaga Vargas[5], Price Jackson[6], Caroline Stokke[7], Julia Brosch-Lenz[8], Althea Lang[9], Stephen A. Graves[10], and John J. Sunderland[10]



Carlos Uribe, PhD, MCCPM

Advancing Radiation Safety. Empowering Progress.

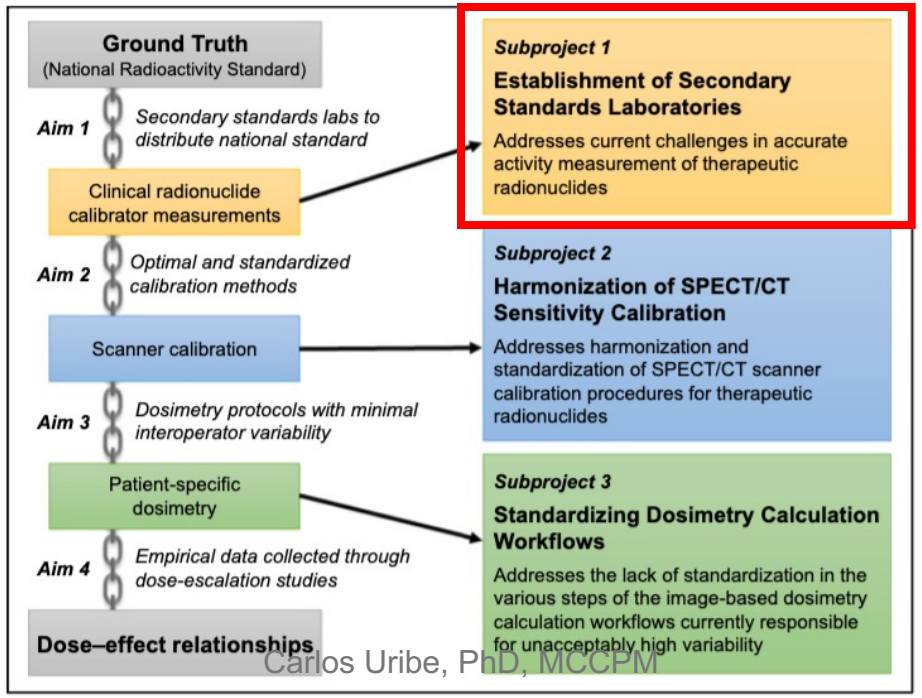
The PDIB Project

Journal of Nuclear Medicine, published on April 2, 2026 as doi:10.2967/jnumed.125.271665

EDITORIAL

Pulling Together: A 5-Year Plan to Improve Theranostic Outcomes by Improving the Accuracy of Dosimetry—An FNIH Joint Academic, Clinical, and Industrial Collaboration

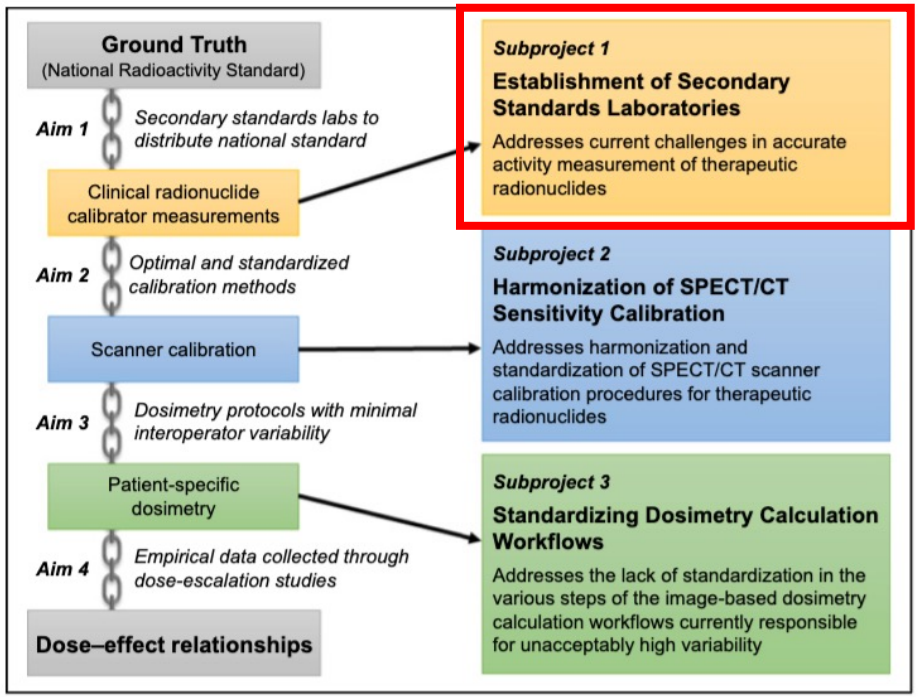
Dale L. Bailey[1], John C. Dickson[2], Suzanne E. Lapi[3], Carlos Uribe[4], Clarita Saldarriaga Vargas[5], Price Jackson[6], Caroline Stokke[7], Julia Brosch-Lenz[8], Althea Lang[9], Stephen A. Graves[10], and John J. Sunderland[10]



Carlos Uribe, PhD, MCCPM

Advancing Radiation Safety. Empowering Progress.

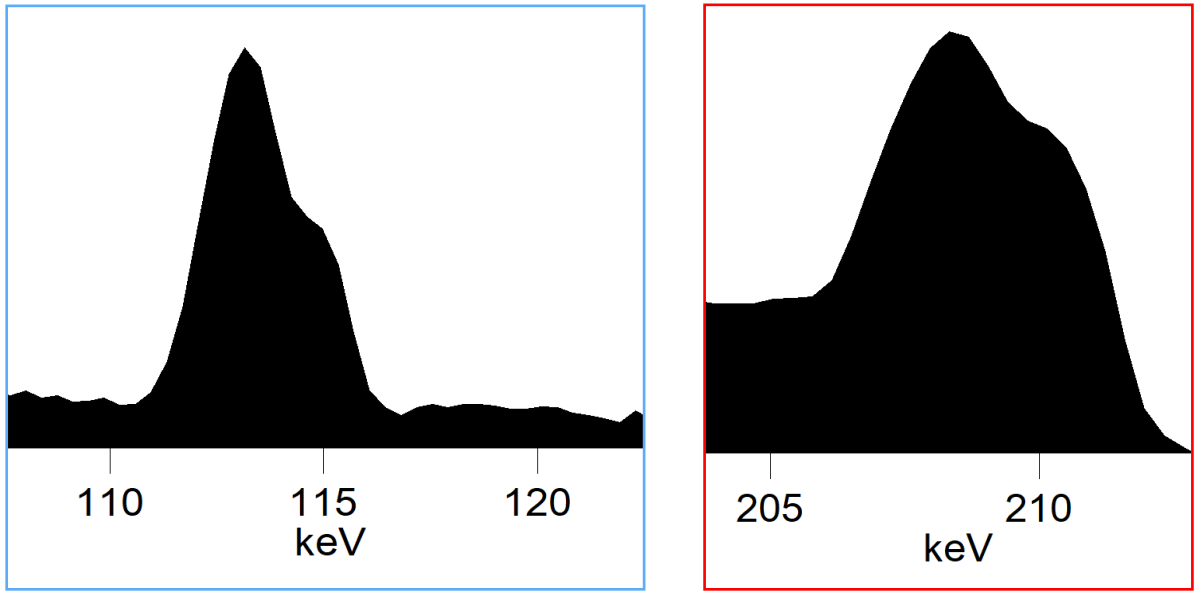
HPGe spectrometers

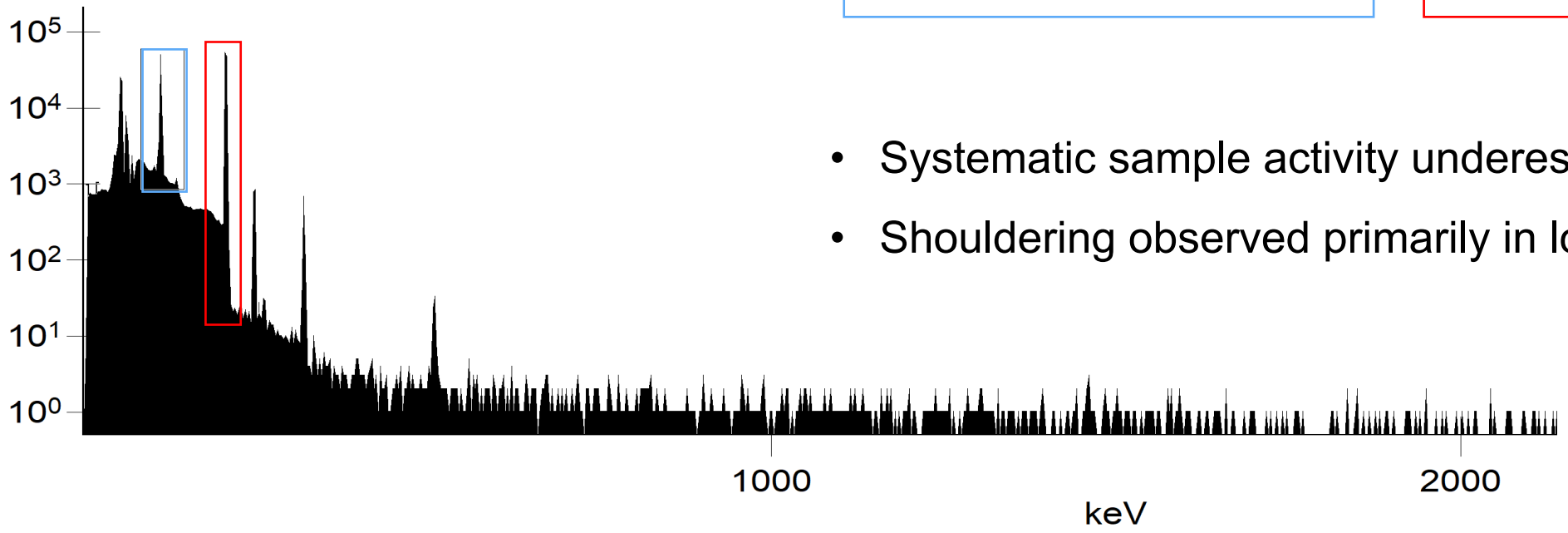


HPGe spectrometers

HPGe PDIB Test #1…

We Detected an Issue

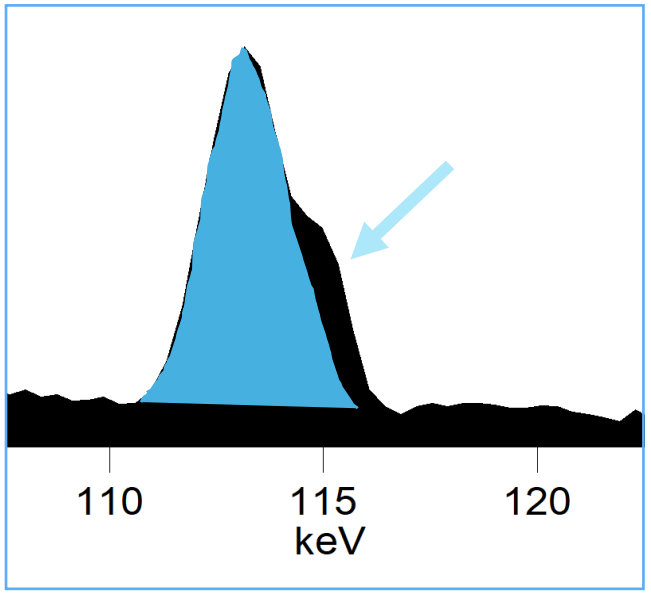


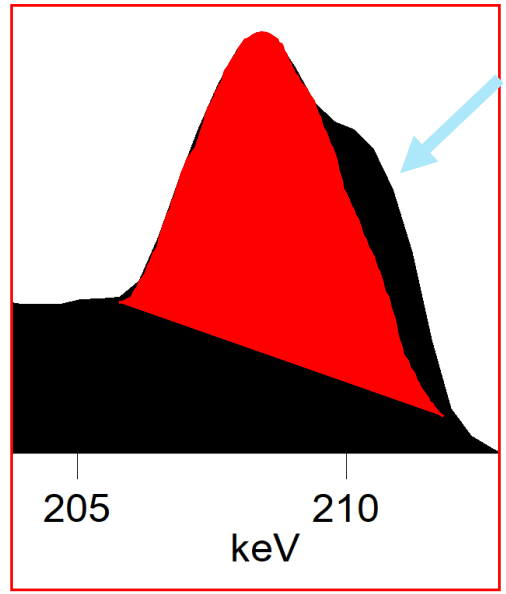


- Systematic sample activity underestimation
- Shouldering observed primarily in low energy peaks

^{177}Lu, 10mL ISO glass vial, dead time: 0.52%

We Detected an Issue





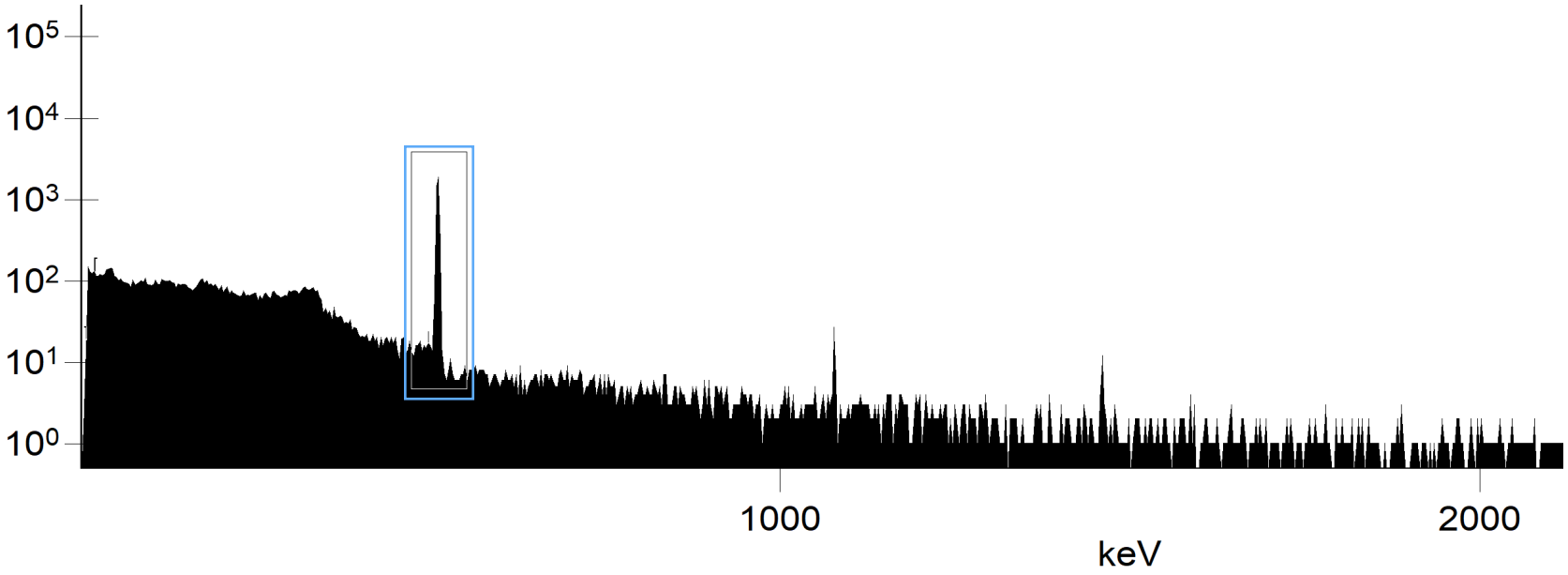
- Shoulder region excluded from total peak counts
- Issue with quantifying samples and conducting efficiency calibration

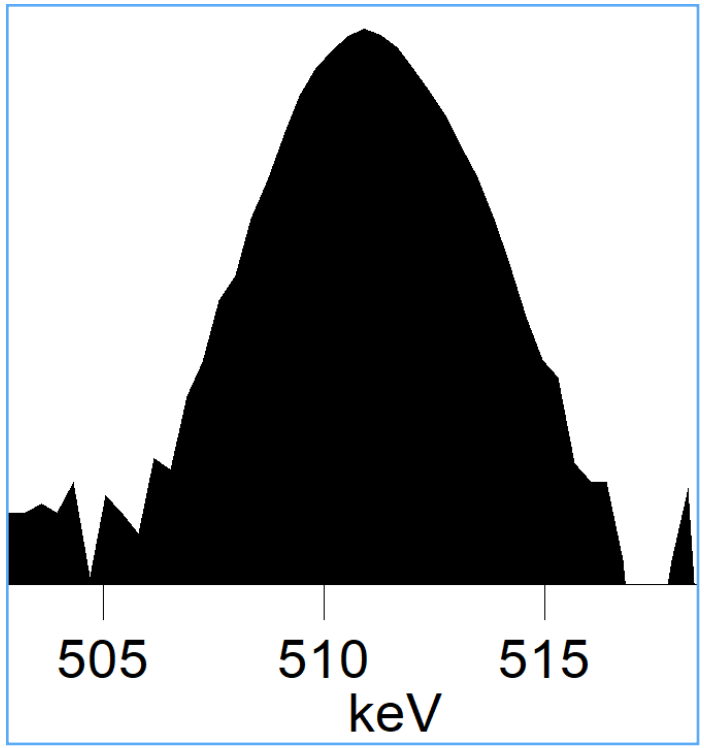
Carlos Uribe, PhD, MCCPM

^{177}Lu, 10mL ISO glass vial, dead time: 0.52%

We Detected an Issue

- Detector primarily used for ^{18}F samples prior to 2025
- Shoulder region not visible in high FWHM peaks

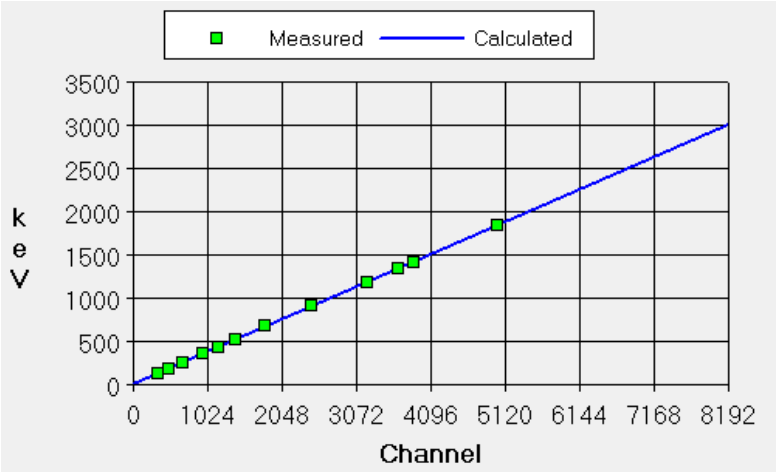


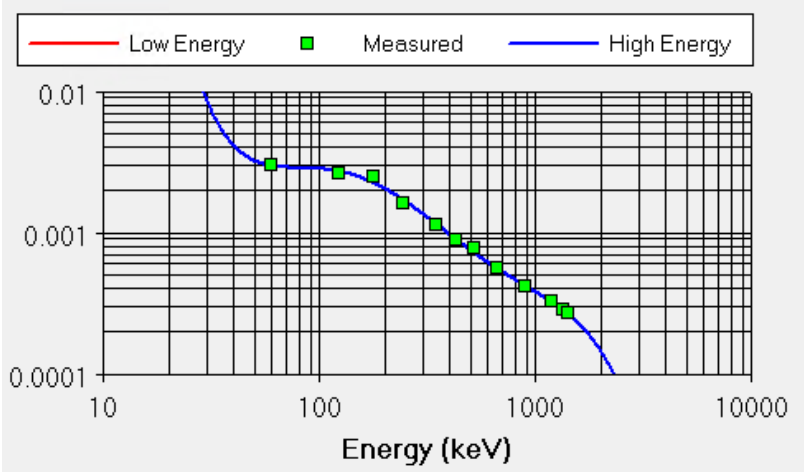


^{68}Ga, 20mL glass vial, dead time: 0.13%

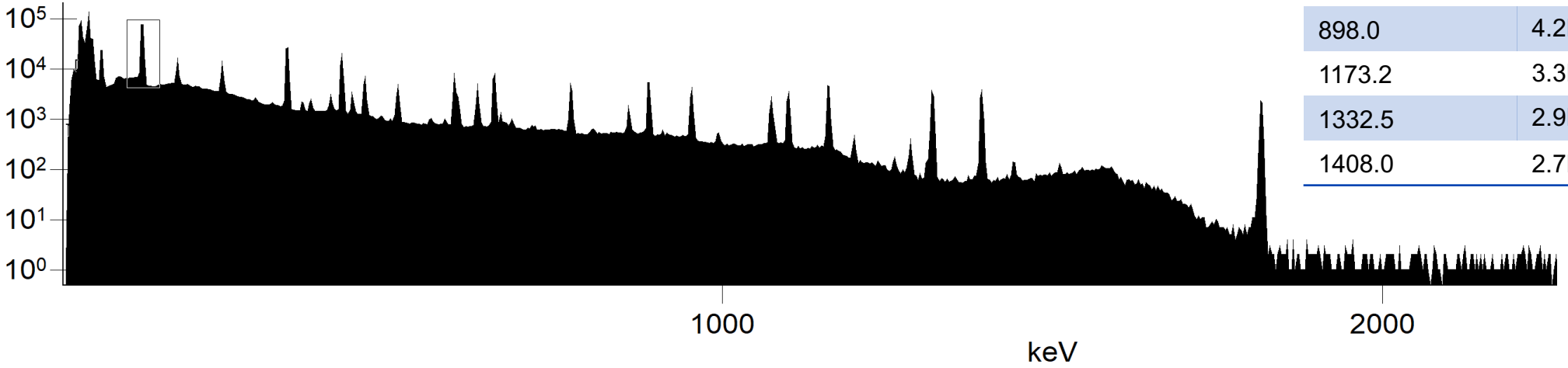
We Detected an Issue

Energy & efficiency calibration with shouldering observed in mixed standard





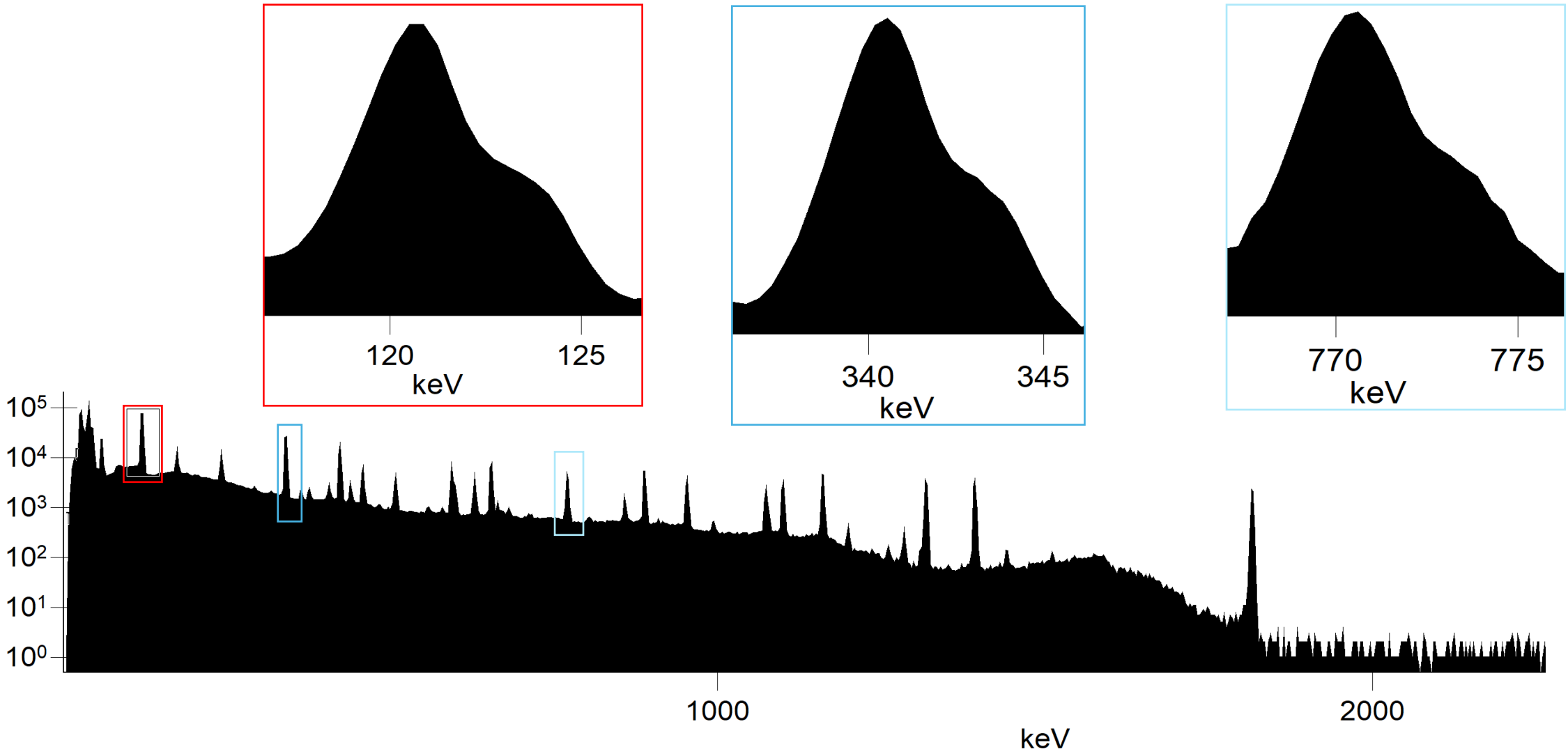
Peak Energy (keV)	Calculated Efficiency	Deviation from Measured Efficiency (%)
59.5	2.96E-3	-0.22
121.8	2.72E-3	2.87
176.3	2.26E-3	-8.35
244.7	1.70E-3	5.51
344.3	1.16E-3	1.97
427.9	9.0E-4	1.06
514.0	7.3E-4	-4.62
661.7	5.6E-4	0.46
898.0	4.2E-4	1.19
1173.2	3.3E-4	-0.19
1332.5	2.9E-4	1.50
1408.0	2.7E-4	-1.40



E&Z mixed standard, 10mL ISO glass vial, dead time: 2.13%

Mirion Support

1) Altered Flat Top & Rise Time ⟶ No change in shouldering



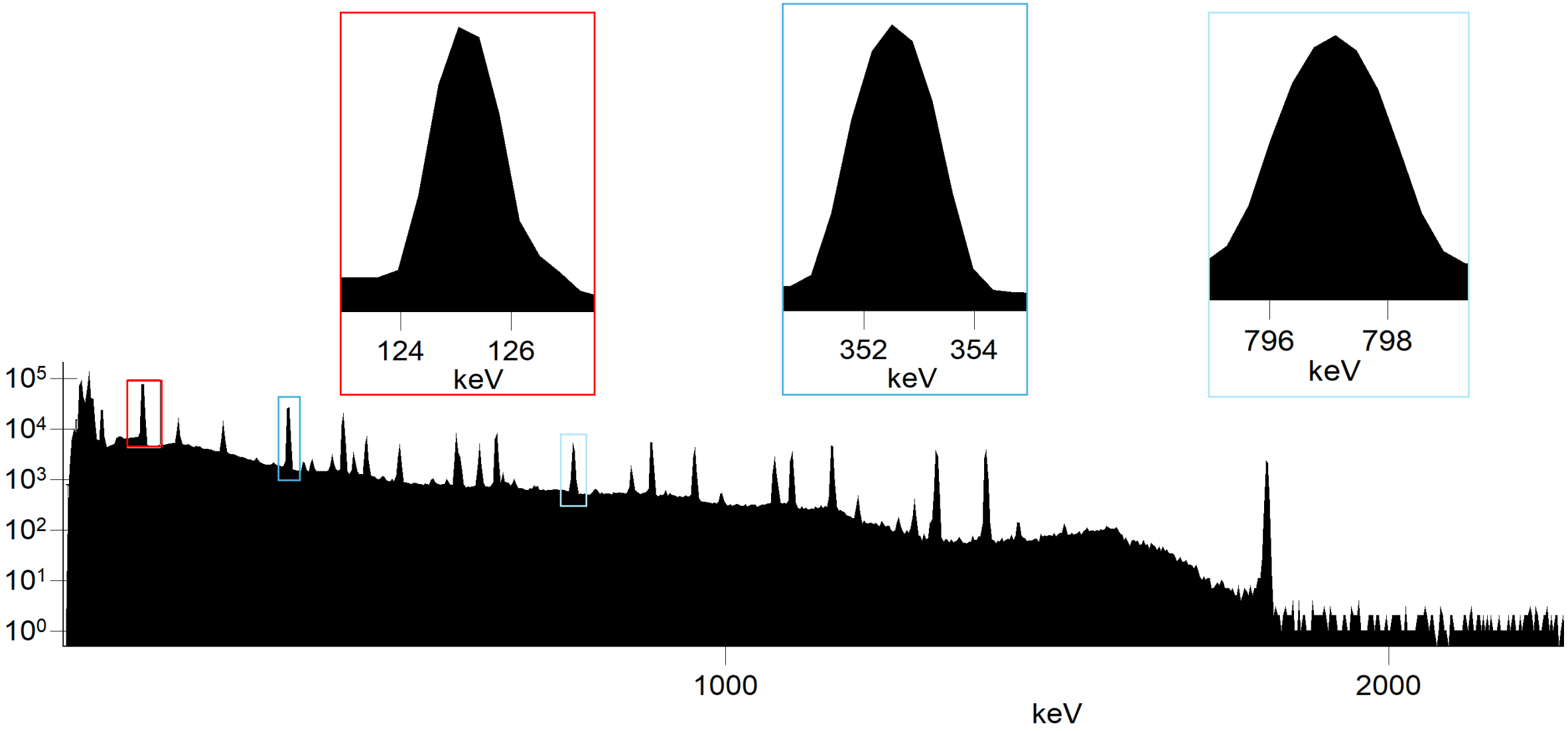
Carlos Uribe, PhD, MCCPM

E&Z mixed standard, 10mL ISO glass vial, dead time: 3.08%

Advancing Radiation Safety. Empowering Progress.

Mirion Support

2) Thermal cycled detector ⟶ Shouldering removed, some high-energy tailing remaining

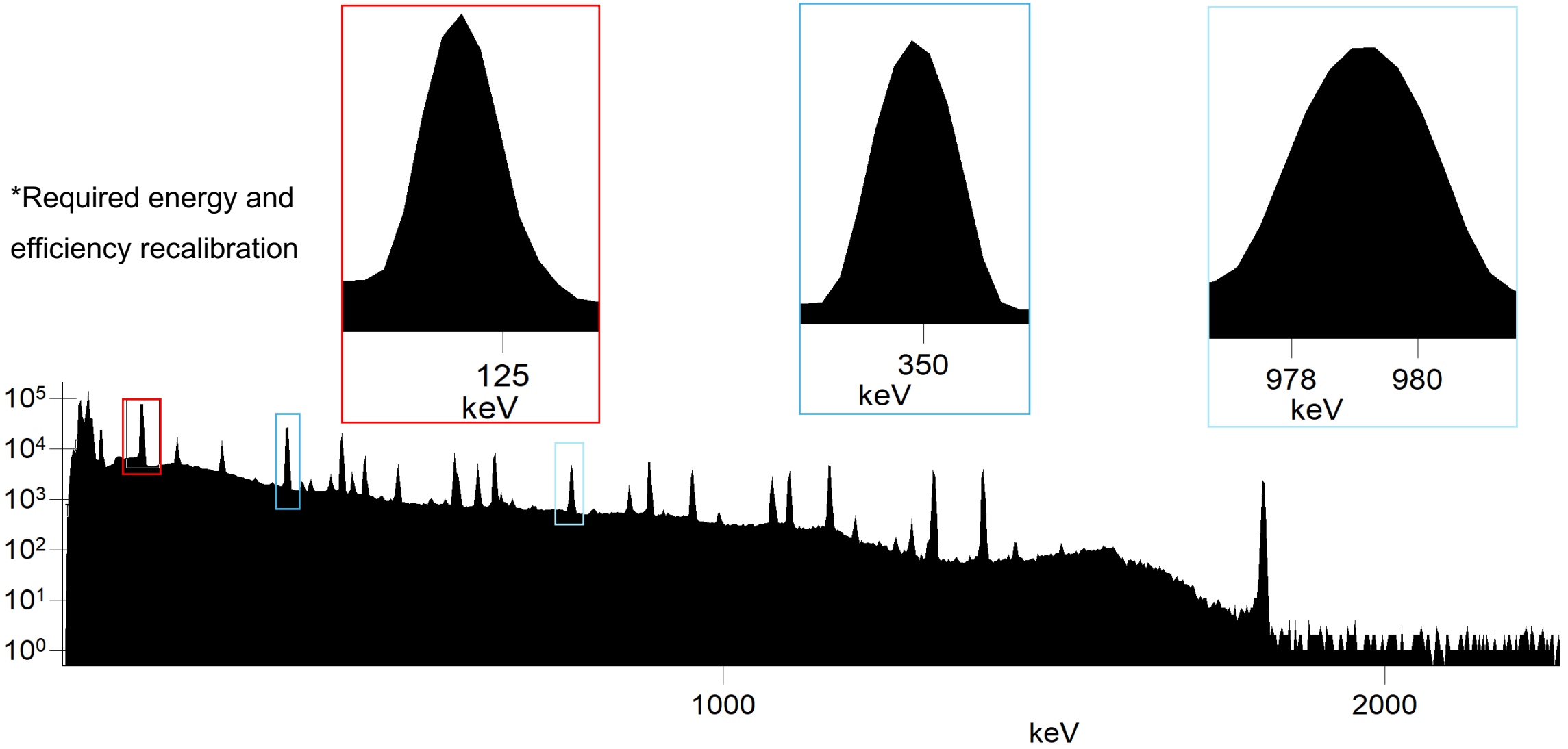


E&Z mixed standard, 10mL ISO glass vial, dead time: 2.05%

Mirion Support

3) Further optimized Flat Top & Rise Time ⟶ Improved overall peak shape

*Required energy and efficiency recalibration

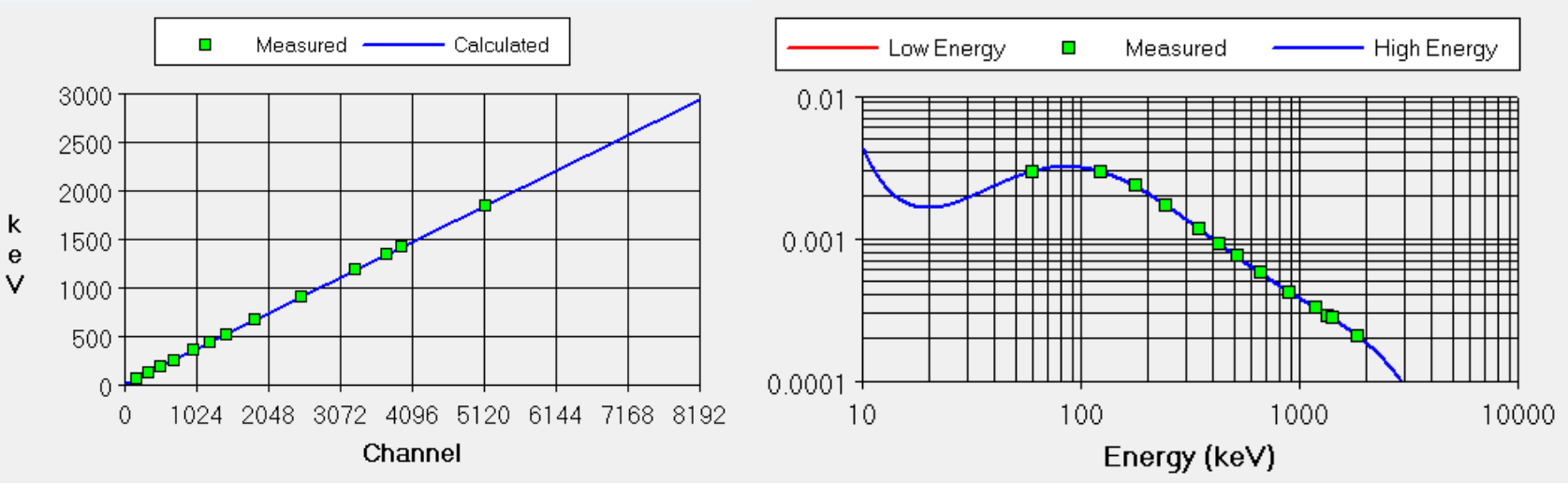


E&Z mixed standard, 10mL ISO glass vial, dead time: 2.13%

Advancing Radiation Safety. Empowering Progress.

Mirion Support

New energy & efficiency calibration



Peak Energy (keV)	Calculated Efficiency	Deviation from Measured Efficiency (%)
59.5	2.95E-3	-0.08
121.8	2.93E-3	0.89
176.3	2.31E-3	-1.51
244.7	1.70E-3	-0.04
344.3	1.17E-3	1.18
427.9	9.1E-4	0.80
514.0	7.4E-4	-0.61
661.7	5.7E-4	-1.08
898.0	4.2E-4	0.13
1173.2	3.3E-4	-0.04
1332.5	2.9E-4	0.58
1408.0	2.7E-4	0.05
1836.1	2.1E-4	-0.21

Deviation from national standards labs:

- Previously: **-5.0%**
- Now: **+1.1%**

Thank you to Henrik Persson, Steve Mettler, and the whole Mirion team for all the help

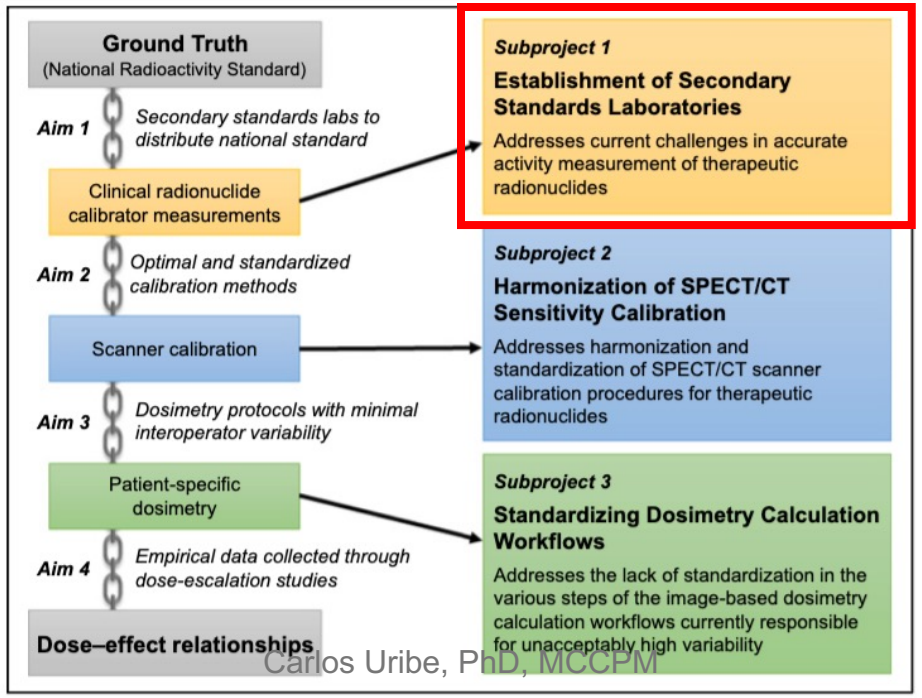
The PDIB Project

Journal of Nuclear Medicine, published on April 2, 2026 as doi:10.2967/jnumed.125.271665

EDITORIAL

Pulling Together: A 5-Year Plan to Improve Theranostic Outcomes by Improving the Accuracy of Dosimetry—An FNIH Joint Academic, Clinical, and Industrial Collaboration

Dale L. Bailey[1], John C. Dickson[2], Suzanne E. Lapi[3], Carlos Uribe[4], Clarita Saldarriaga Vargas[5], Price Jackson[6], Caroline Stokke[7], Julia Brosch-Lenz[8], Althea Lang[9], Stephen A. Graves[10], and John J. Sunderland[10]

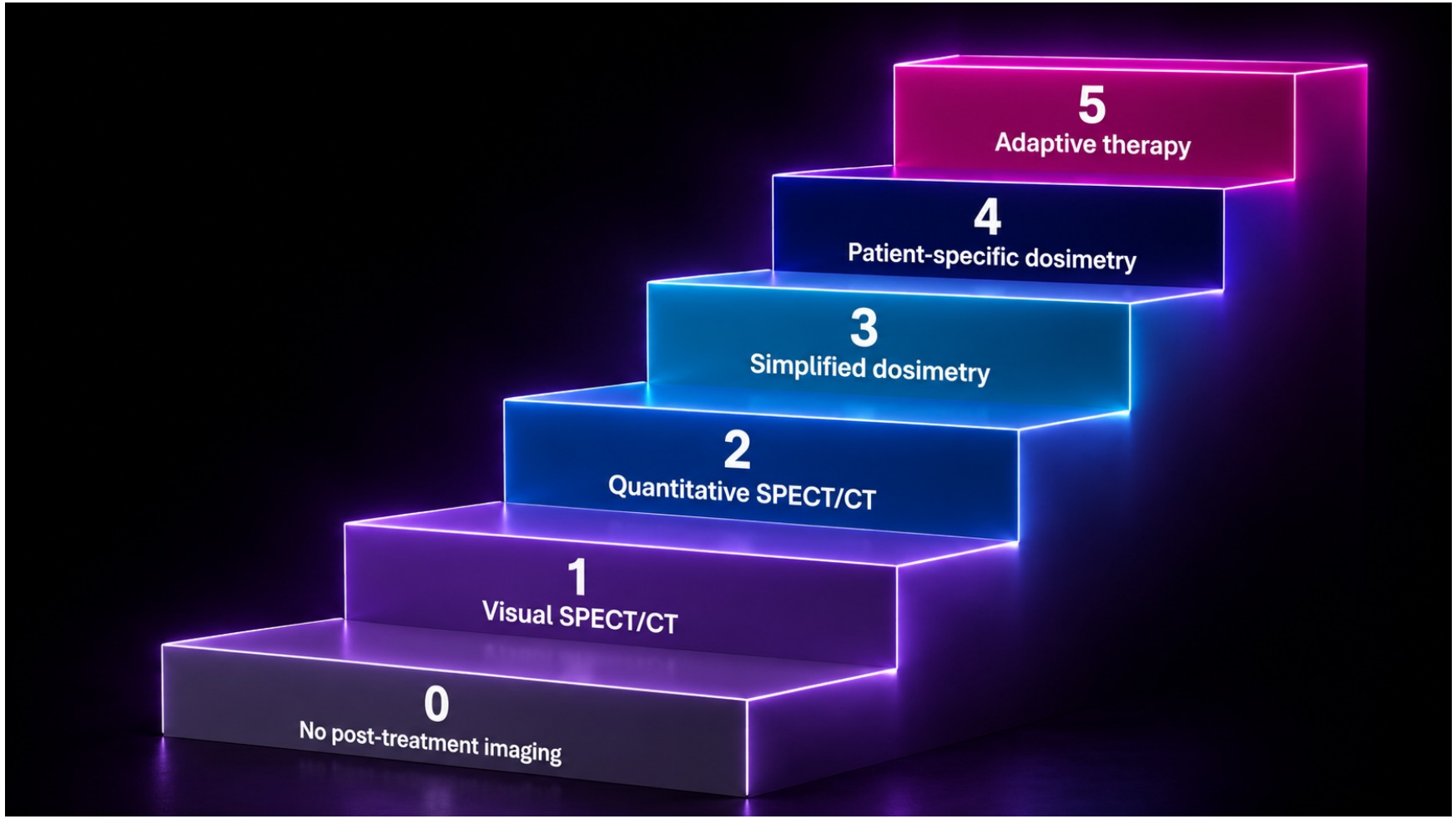


Carlos Uribe, PhD, MCCPM

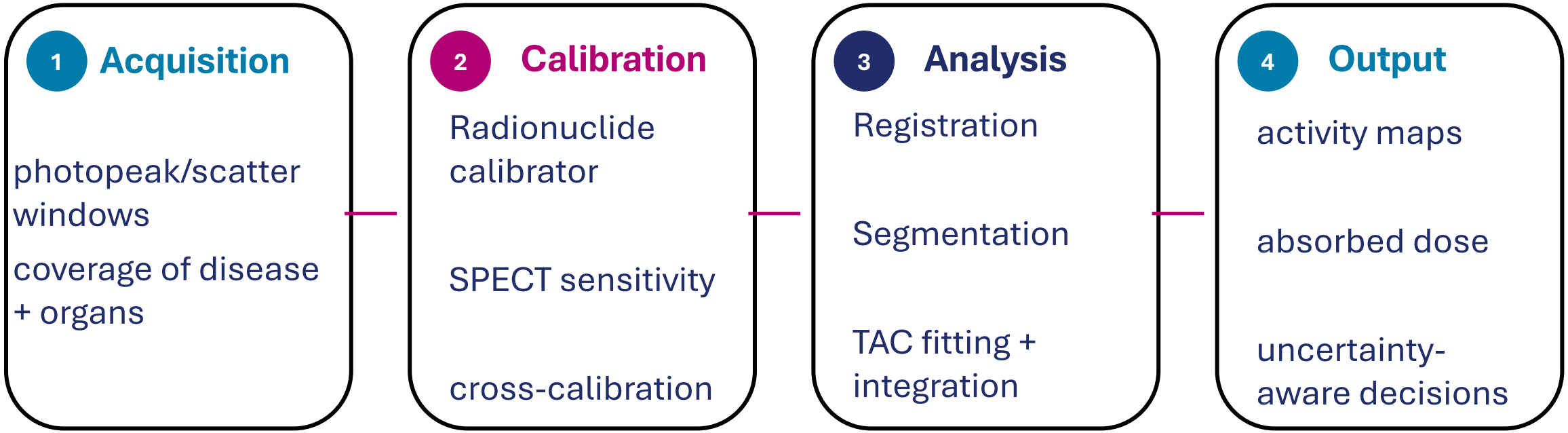
Advancing Radiation Safety. Empowering Progress.

Dosimetry is a staircase, not an on/off switch

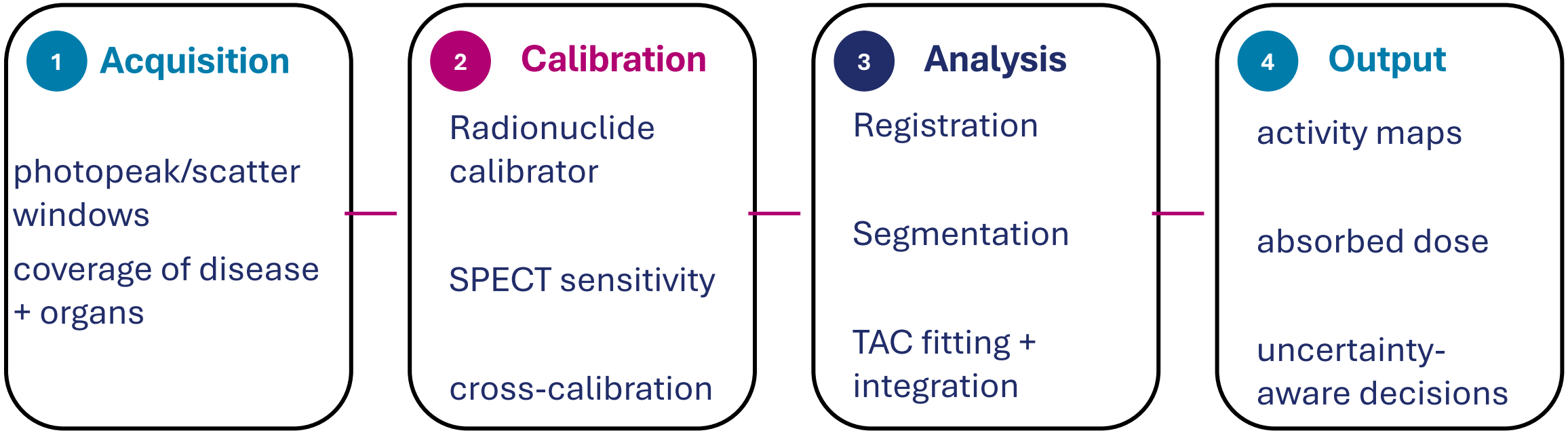
Start where the clinical workflow can support it. Build toward adaptive therapy.



Quantitative SPECT/CT is the foundation for dosimetry



Quantitative SPECT/CT is the foundation for dosimetry

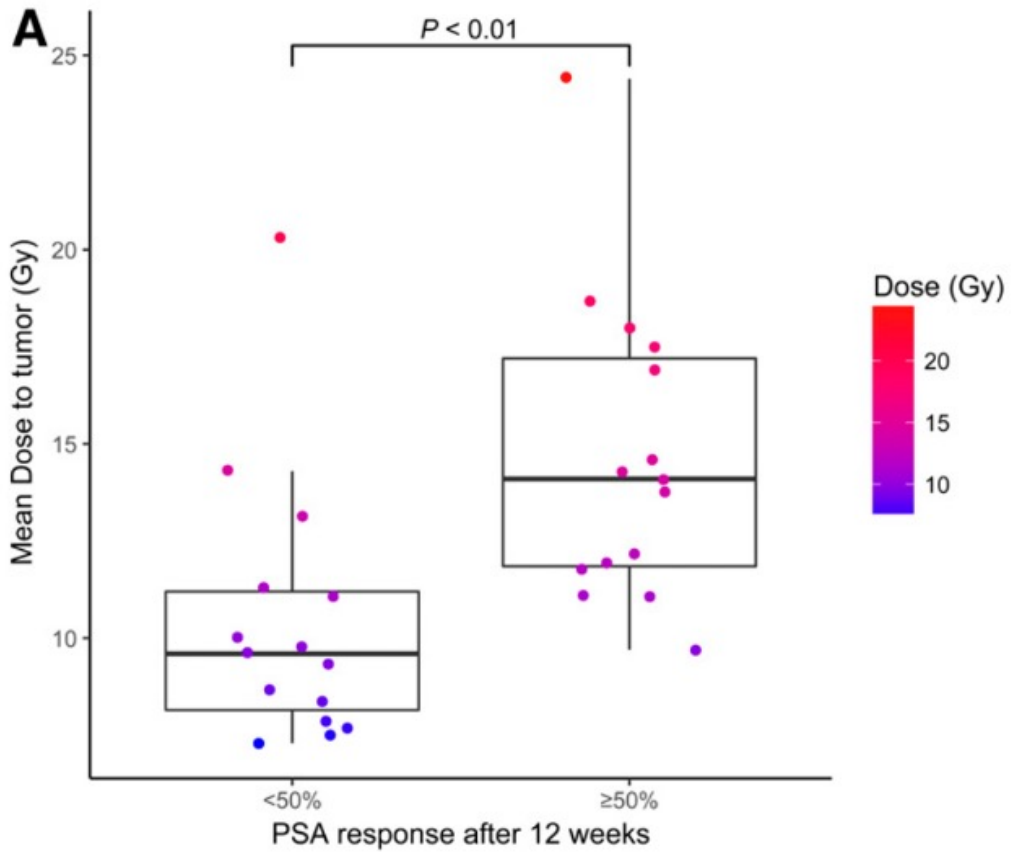


Without quantitative imaging, dosimetry is not a clinical measurement, it is just an assumption.

Carlos Uribe, PhD, MCCPM

Advancing Radiation Safety.
Empowering Progress.

Tumor absorbed dose is already linked to response in PSMA RPT



PSA ≥50% decline

Median tumor dose: 14.1 Gy

PSA <50% decline

Median tumor dose: 9.6 Gy

Low-dose group

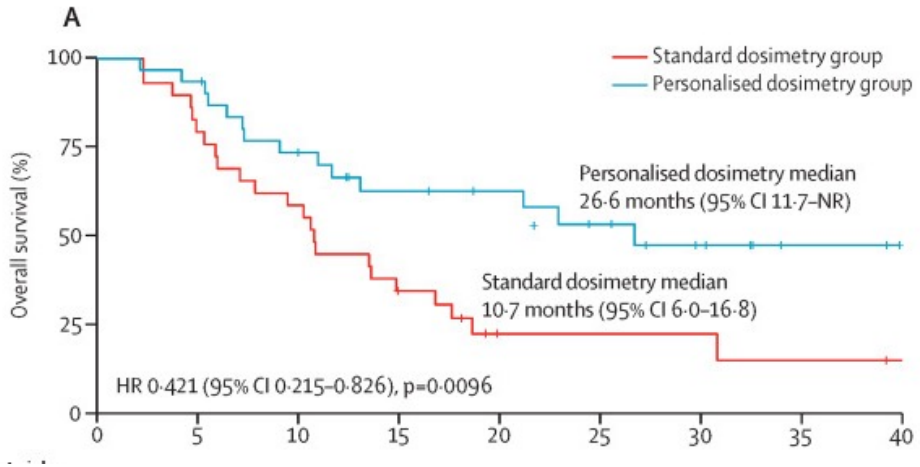
Only 1/11 patients below 10 Gy achieved PSA ≥50% response

Violet et al. J Nucl Med. 2019;60:517–523

Personalized dosimetry has changed outcomes in RPTs

DOSISPHERE-01: proof of principle

Not the same disease or agent as ^{177}Lu RPT, but a powerful randomized example that absorbed-dose planning can change clinical outcomes.



Garin E, Tselikas L, Guiu B et al.The Lancet Gastroenterology & Hepatology, 2020; 6, 17-29

Response

↑ objective response

Survival

↑ overall survival

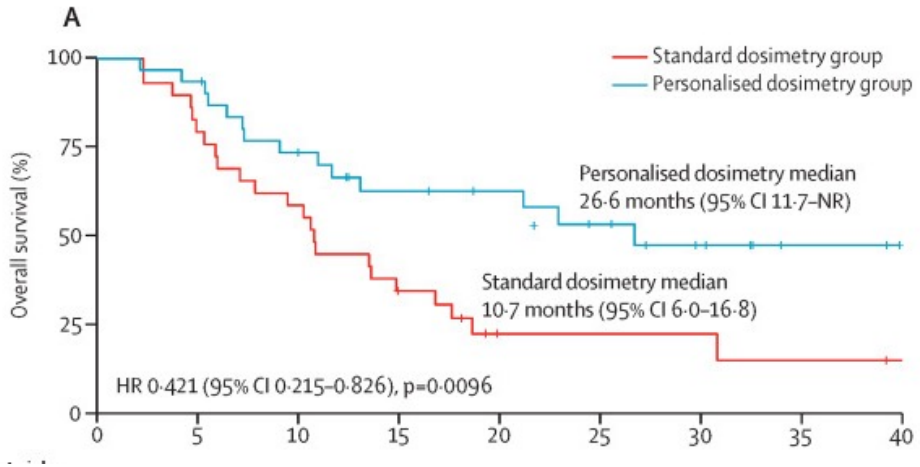
Downstaging

↑ surgical downstaging

Personalized dosimetry has changed outcomes in RPTs

DOSISPHERE-01: proof of principle

Not the same disease or agent as ^{177}Lu RPT, but a powerful randomized example that absorbed-dose planning can change clinical outcomes.



Garin E, Tselikas L, Guiu B et al.The Lancet Gastroenterology & Hepatology, 2020; 6, 17-29

Response

↑ objective response

Survival

↑ overall survival

Downstaging

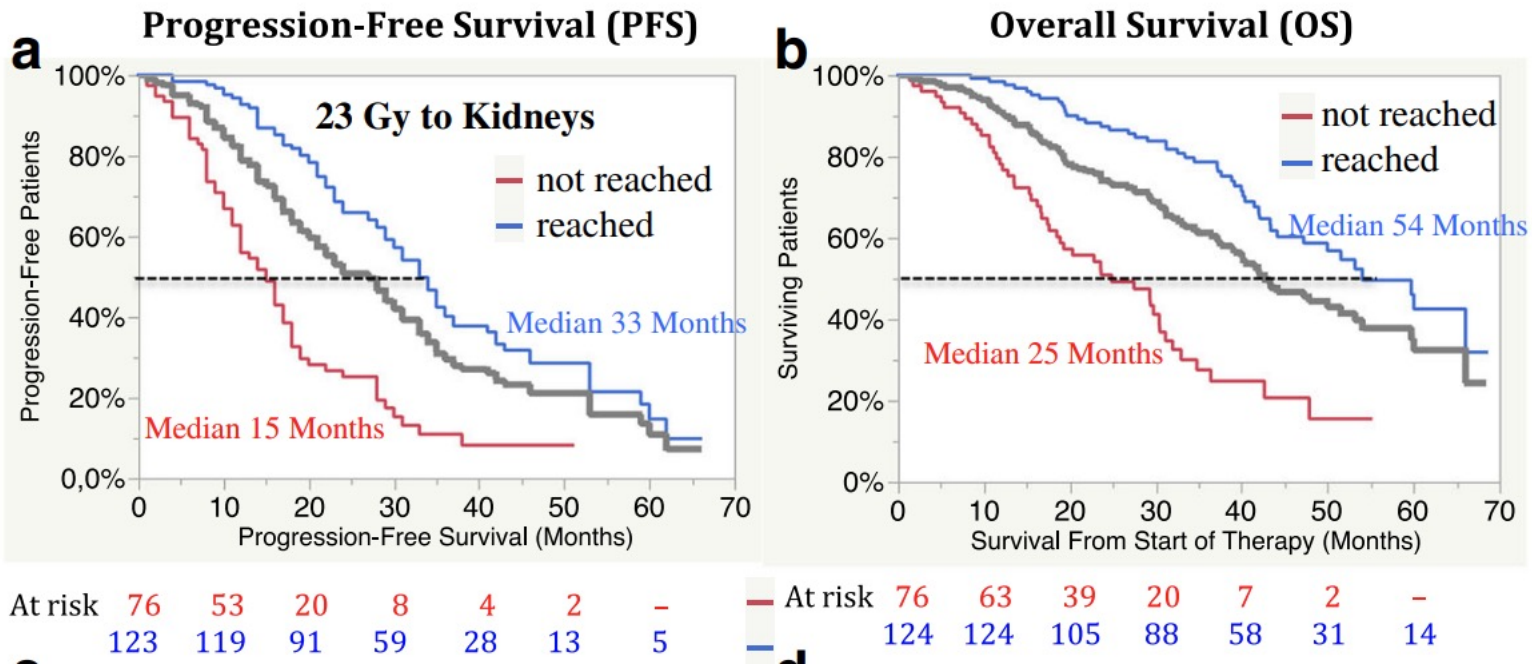
↑ surgical downstaging

The clinical question shifts from "what activity do we give?" to "what dose are we trying to deliver?"

Personalized dosimetry has changed outcomes in RPTs

Prospective observational study of ^{177}Lu-DOTA-octreotate therapy in 200 patients with advanced metastasized neuroendocrine tumours (NETs): feasibility and impact of a dosimetry-guided study protocol on outcome and toxicity

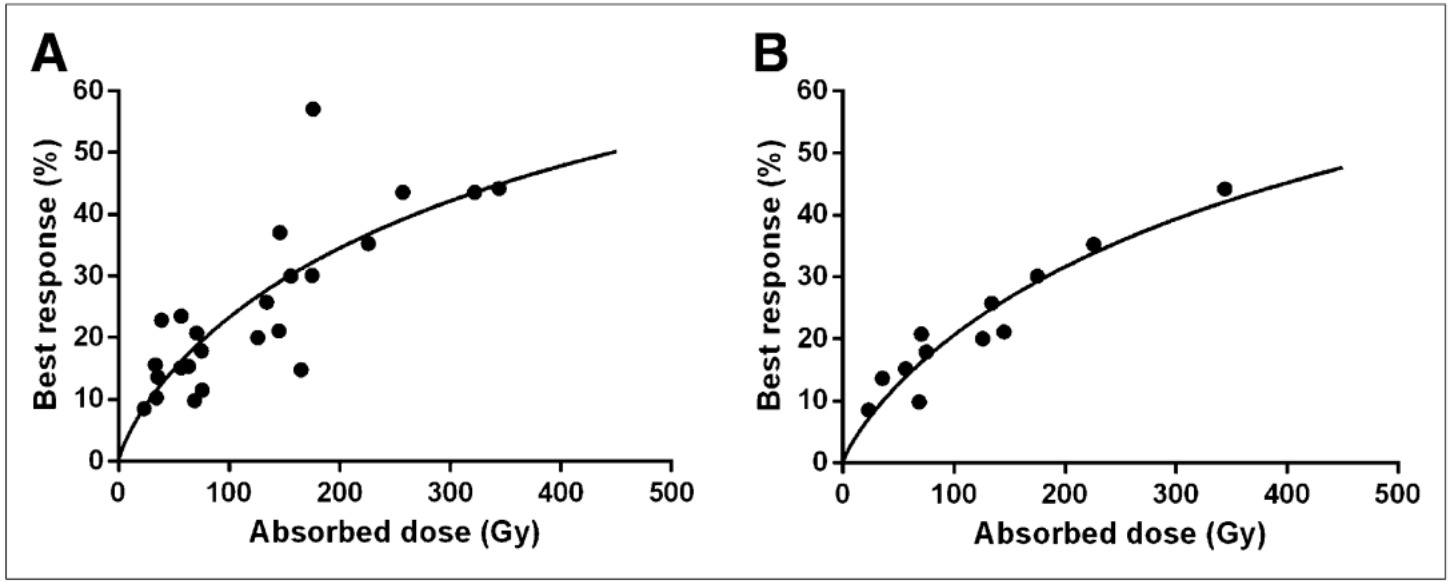
Ulrike Garske-Román[1,2] · Mattias Sandström[3] · Katarzyna Fröss Baron[4] · Lars Lundin[2] · Per Hellman[2] · Staffan Welin[4] · Silvia Johansson[4] · Tanweera Khan[4] · Hans Lundqvist[3] · Barbro Eriksson[4] · Anders Sundin[2] · Dan Granberg[4]



Tumors respond better with higher absorbed doses

Dose Response of Pancreatic Neuroendocrine Tumors Treated with Peptide Receptor Radionuclide Therapy Using ^{177}Lu-DOTATATE

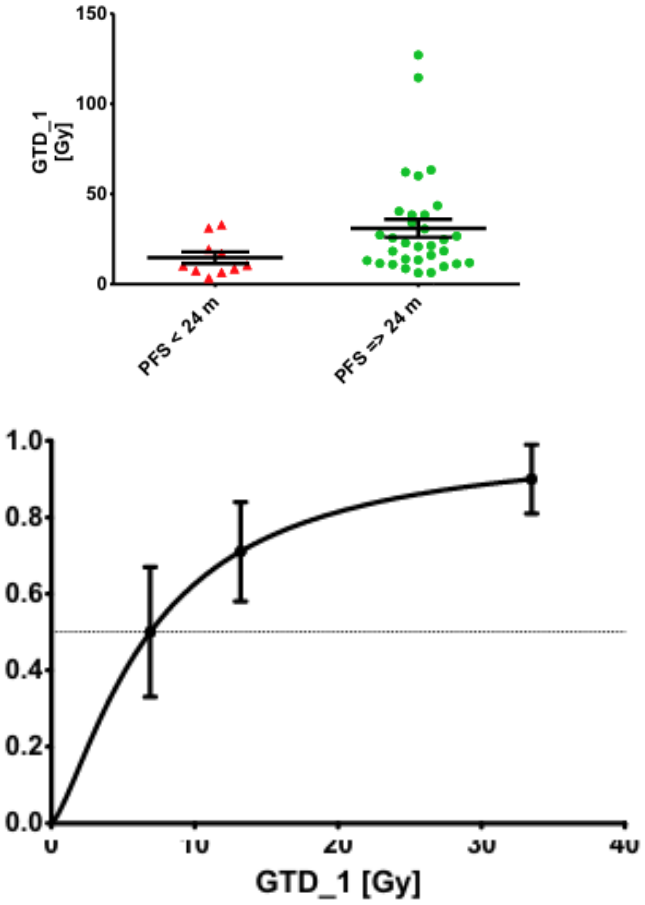
Ezgi Ilan[1,2], Mattias Sandström[1,2], Cecilia Wassberg[1,3], Anders Sundin[1,3], Ulrike Garske–Román[1,3], Barbro Eriksson[4], Dan Granberg[4], and Mark Lubberink[1,2]



Tumors respond better with higher absorbed doses

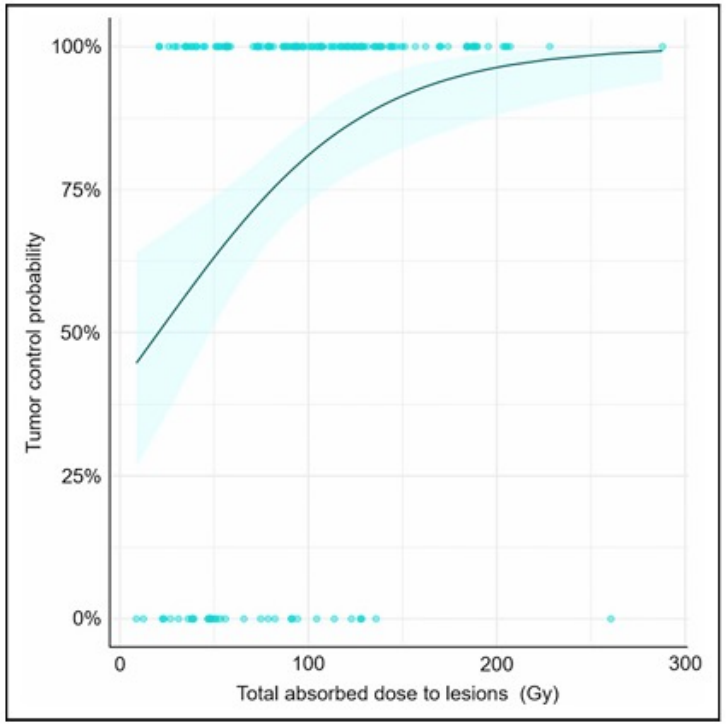
The LUTADOSE trial: tumour dosimetry after the first administration predicts progression free survival in gastro-entero-pancreatic neuroendocrine tumours (GEP NETs) patients treated with [^{177}Lu] Lu-DOTATATE

Marco Maccauro[1] · Mariarosaria Cuomo[1,2] · Matteo Bauckneht[3,4] · Matteo Bagnalasta[1] · Stefania Mazzaglia[1] · Federica Scalorbi[1] · Giovanni Argiroffi[1] · Margarita Kirienko[1] · Alice Lorenzoni[1] · Gianluca Aliberti[1] · Sara Pusceddu[5] · Calareso Giuseppina[6] · Garanzini Enrico Matteo[6] · Ettore Seregni[1] · Carlo Chiesa[1]



Absorbed Dose–Response Relationship in Patients with Gastroenteropancreatic Neuroendocrine Tumors Treated with [^{177}Lu]Lu-DOTATATE: One Step Closer to Personalized Medicine

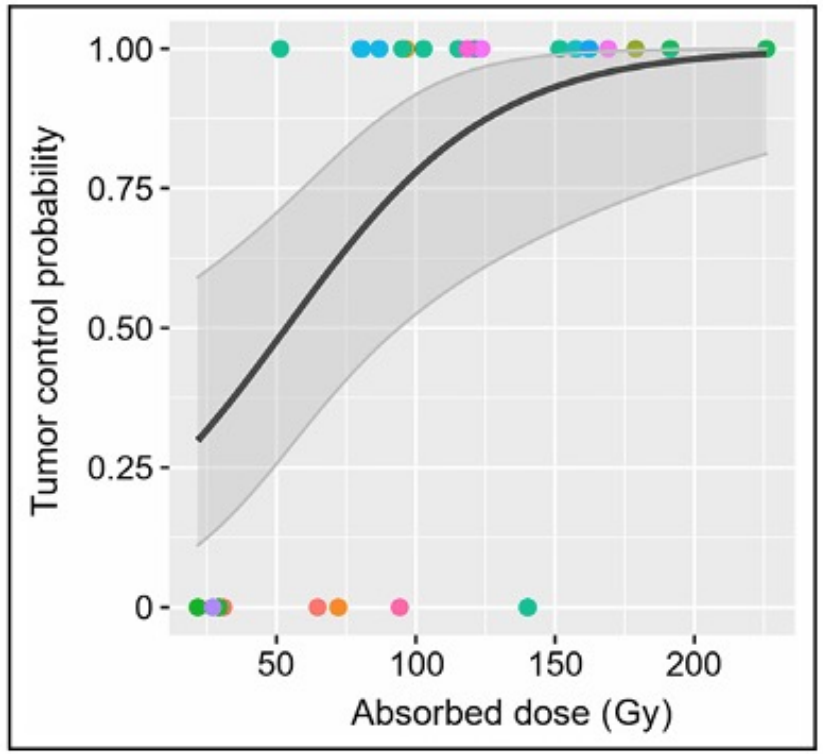
Kévin Hebert*[1], Lore Santoro*[1,2], Maeva Monnier[3], Florence Castan[3], Ikrame Berkane[1], Eric Assénat[4], Cyril Fersing[1–5], Pauline Gélibert[6], Jean-Pierre Pouget[2], Manuel Bardiès[1,2], Pierre-Olivier Kotzki[1,2], and Emmanuel Deshayes[1,2]



Tumors respond better with higher absorbed doses

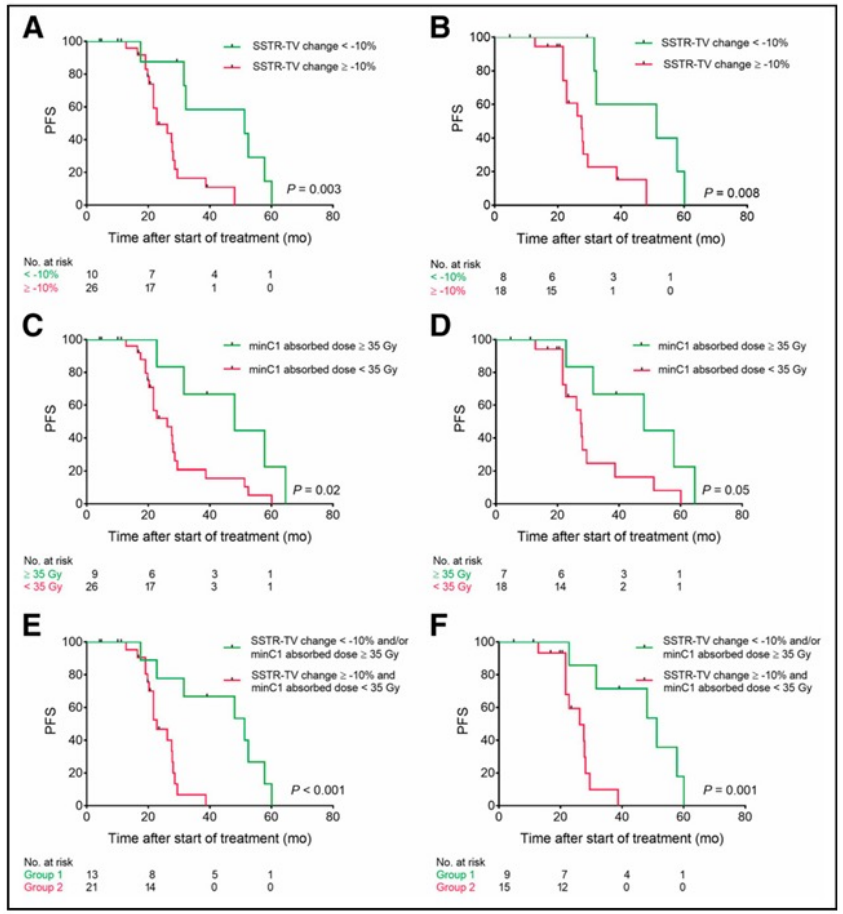
Relationship Between Absorbed Dose and Response in Neuroendocrine Tumors Treated with [^{177}Lu]Lu-DOTATATE

Carl Fredrik Warfvinge[1,2], Johan Gustafsson[3], Daniel Roth[3], Jan Tennvall[2], Johanna Svensson[4], Peter Bernhardt[5,6], Anna Åkesson[7], Elinore Wieslander[1], Anna Sundlöv[2], and Katarina Sjögreen Gleisner[3]



Prediction of ^{177}Lu-DOTATATE PRRT Outcome Using Multimodality Imaging in Patients with Gastroenteropancreatic Neuroendocrine Tumors: Results from a Prospective Phase II LUMEN Study

Magdalena Mileva[1], Gwennaëlle Marin[2], Hugo Levillain[2], Carlos Artigas[1], Camille Van Bogaert[3], Clémentine Marin[2], Rachele Danieli[2], Amelie Deleporte[4], Simona Picchia[5], Konstantinos Stathopoulos[5], Christiane Jungels[4], Bruno Vanderlinden[2], Marianne Paesmans[6], Lieveke Ameye[6], Gabriela Critchi[1], Loubna Taraji-Schiltz[1], Chloe Velghe[6], Zéna Wimana[1,7], Maria Bali[5], Alain Hendlisz[4], Patrick Flamen[1], and Ioannis Karfis[1]



Carlos Uribe, PhD, MCCPM

tion Safety.
g Progress.

Dosimetry is about safety and opportunity

Safety

Identify patients with higher organ absorbed dose

Support risk-aware cycle decisions

Track cumulative exposure

Opportunity

Avoid systematic underdosing

Escalate when safe

Support retreatment and combinations

Learning

Build dose–response datasets

Refine organ limits

Improve trial design

Dosimetry is about safety and opportunity

Safety

Identify patients with higher organ absorbed dose

Support risk-aware cycle decisions

Track cumulative exposure

Opportunity

Avoid systematic underdosing

Escalate when safe

Support retreatment and combinations

Learning

Build dose–response datasets

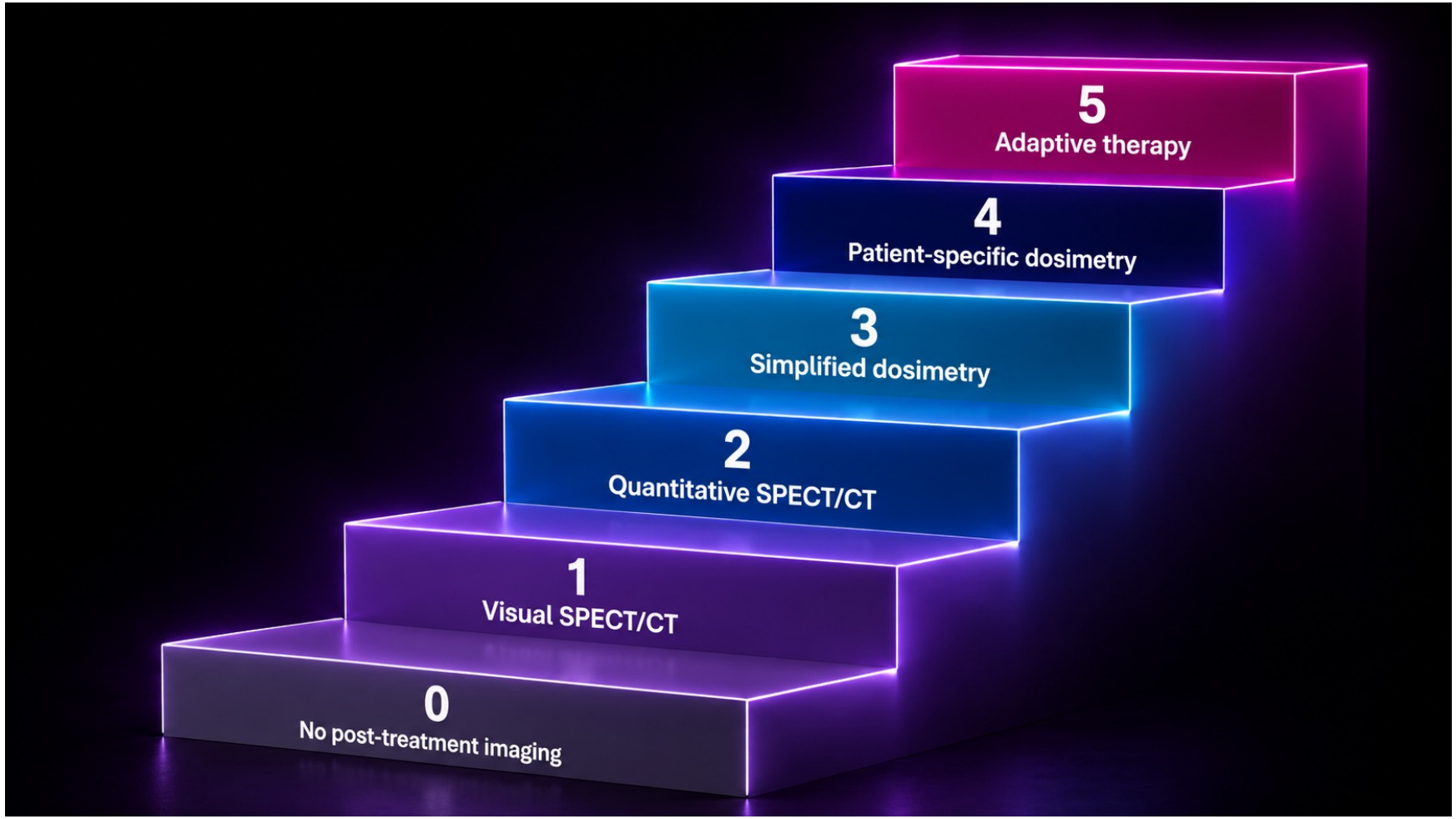
Refine organ limits

Improve trial design

A fixed activity can be simple and scalable, but it cannot tell us whether the patient was underdosed or near a limit.

Dosimetry is a staircase, not an on/off switch

Start where the clinical workflow can support it. Build toward adaptive therapy.



A practical clinical dosimetry workflow can start simple

Feasibility of Single-Time-Point Dosimetry for Radiopharmaceutical Therapies

Xinchi Hou [1], Julia Brosch [2], Carlos Uribe [3 4], Alessandro Desy [5 6], Guido Böning [2], Jean-Mathieu Beauregard [5 6], Anna Celler [3], Arman Rahmim [1 4 7]

Affiliations + expand

PMID: 33127625 PMCID: PMC8882881 DOI: 10.2967/jnumed.120.254656 Paperpile

Free PMC article

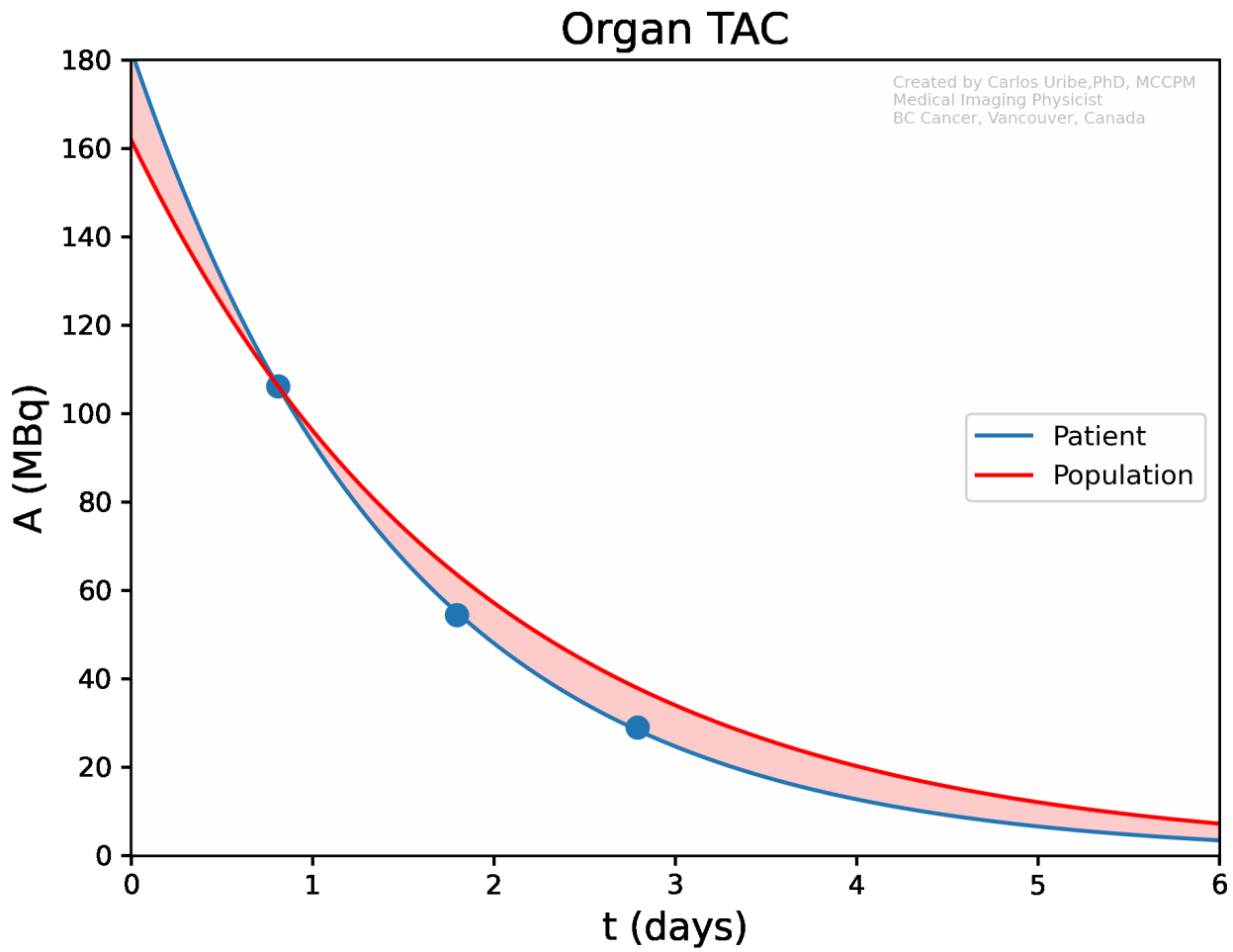
Toward Single-Time-Point Image-Based Dosimetry of ^{177}Lu-PSMA-617 Therapy

Julia Brosch-Lenz [1 2], Astrid Delker [3], Friederike Völter [3], Lena M Unterrainer [3], Lena Kaiser [3], Peter Bartenstein [3], Sibylle Ziegler [3], Arman Rahmim [2 4 5], Carlos Uribe [4 6], Guido Böning [3]

Affiliations + expand

PMID: 36657980 PMCID: PMC10152120 DOI: 10.2967/jnumed.122.264594 Paperpile

Free PMC article



A practical clinical dosimetry workflow can start simple

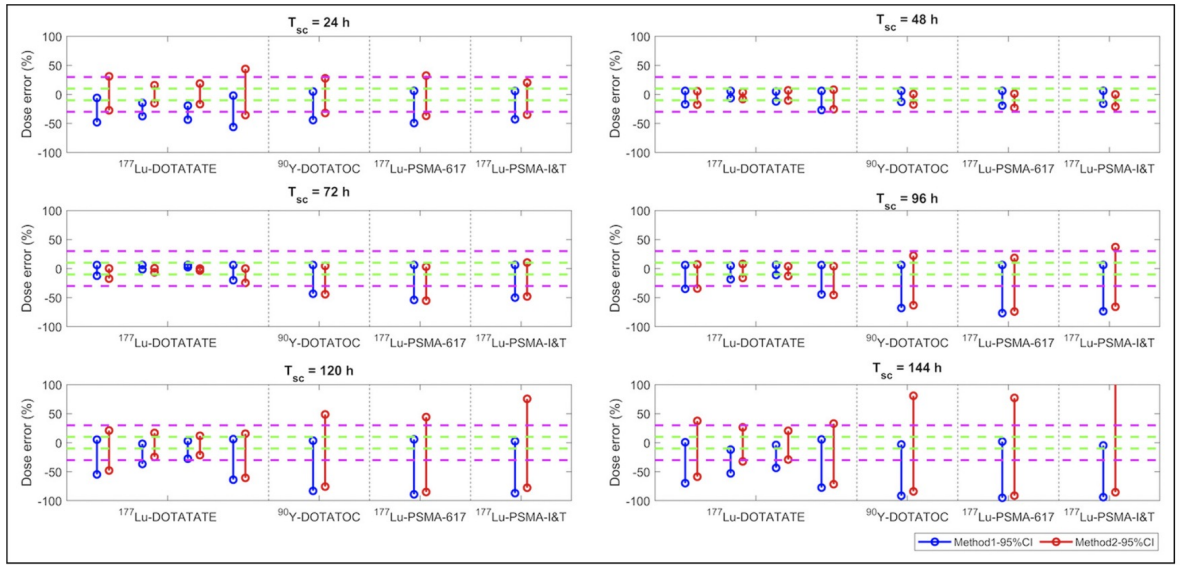
Feasibility of Single-Time-Point Dosimetry for Radiopharmaceutical Therapies

Xinchi Hou [1], Julia Brosch [2], Carlos Uribe [3 4], Alessandro Desy [5 6], Guido Böning [2], Jean-Mathieu Beauregard [5 6], Anna Celler [3], Arman Rahmim [1 4 7]

Affiliations + expand

PMID: 33127625 PMCID: PMC8882881 DOI: 10.2967/jnumed.120.254656 Paperpile

Free PMC article



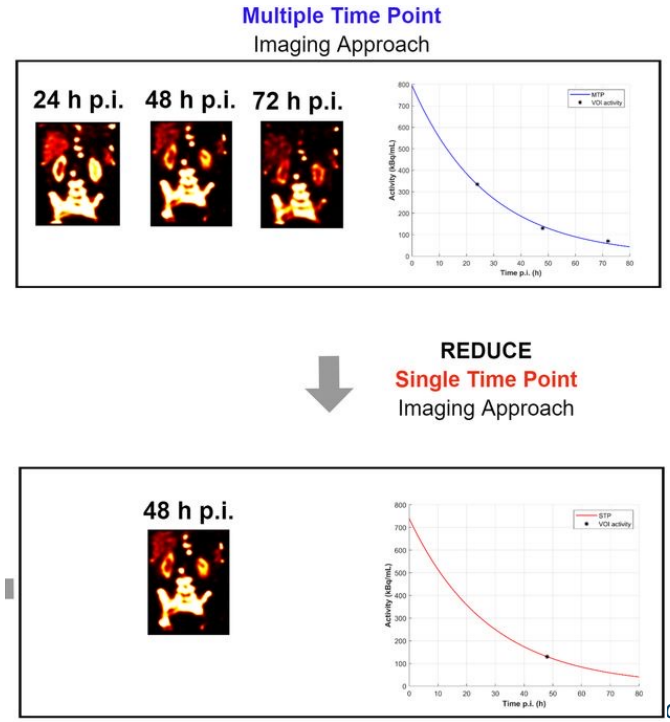
Toward Single-Time-Point Image-Based Dosimetry of ^{177}Lu-PSMA-617 Therapy

Julia Brosch-Lenz [1 2], Astrid Delker [3], Friederike Völter [3], Lena M Unterrainer [3], Lena Kaiser [3], Peter Bartenstein [3], Sibylle Ziegler [3], Arman Rahmim [2 4 5], Carlos Uribe [4 6], Guido Böning [3]

Affiliations + expand

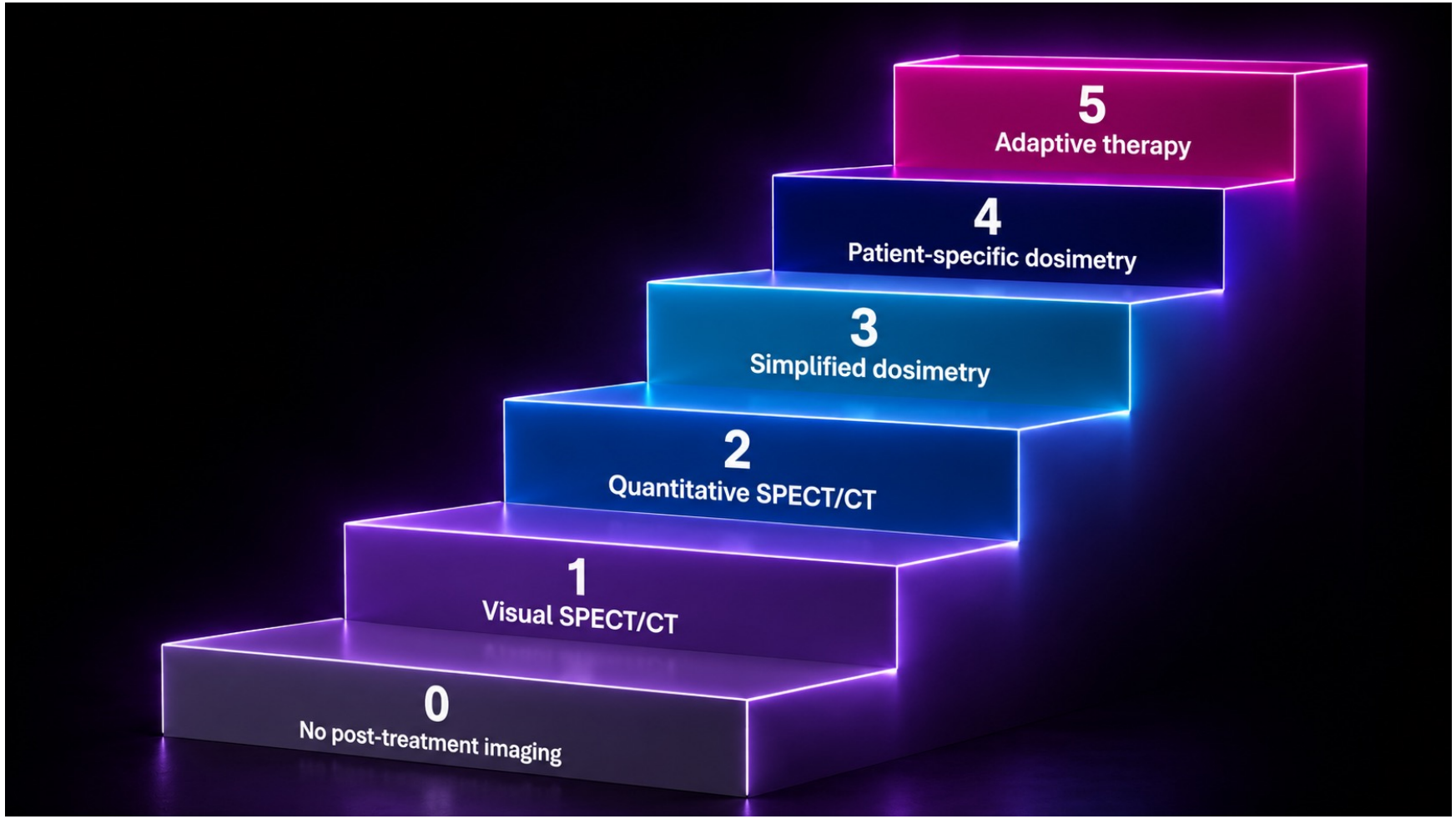
PMID: 36657980 PMCID: PMC10152120 DOI: 10.2967/jnumed.122.264594 Paperpile

Free PMC article

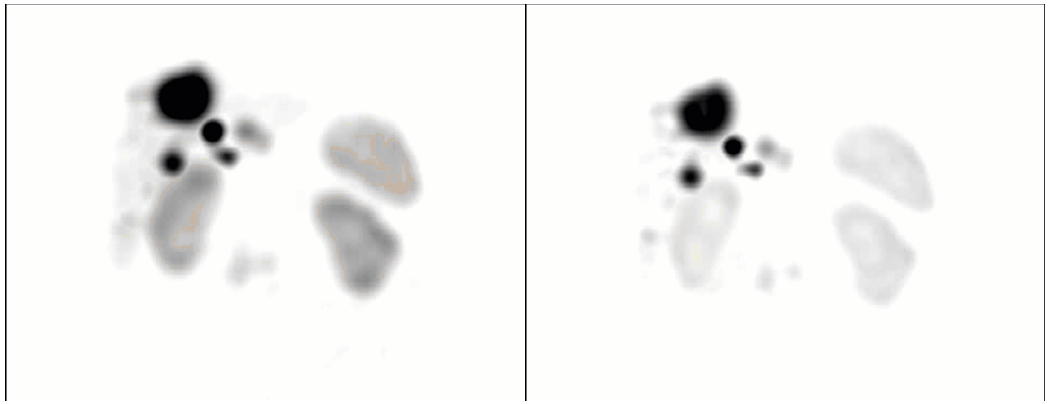


Dosimetry is a staircase, not an on/off switch

Start where the clinical workflow can support it. Build toward adaptive therapy.

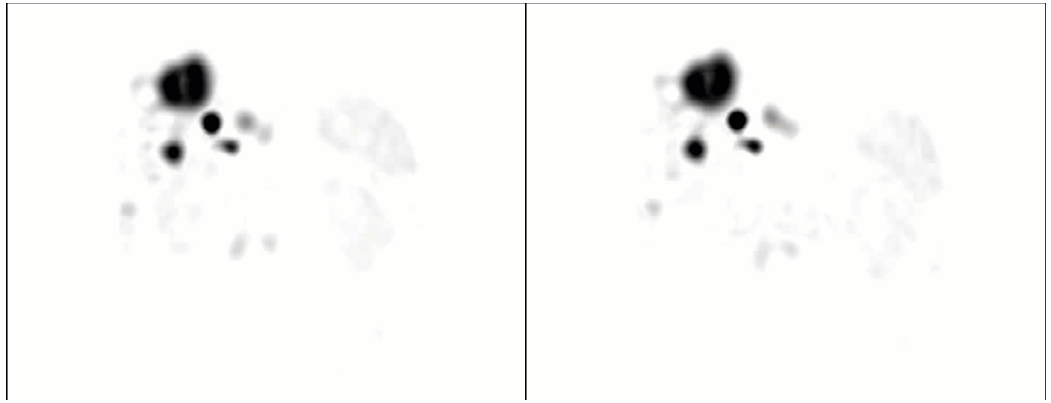


Patient specific



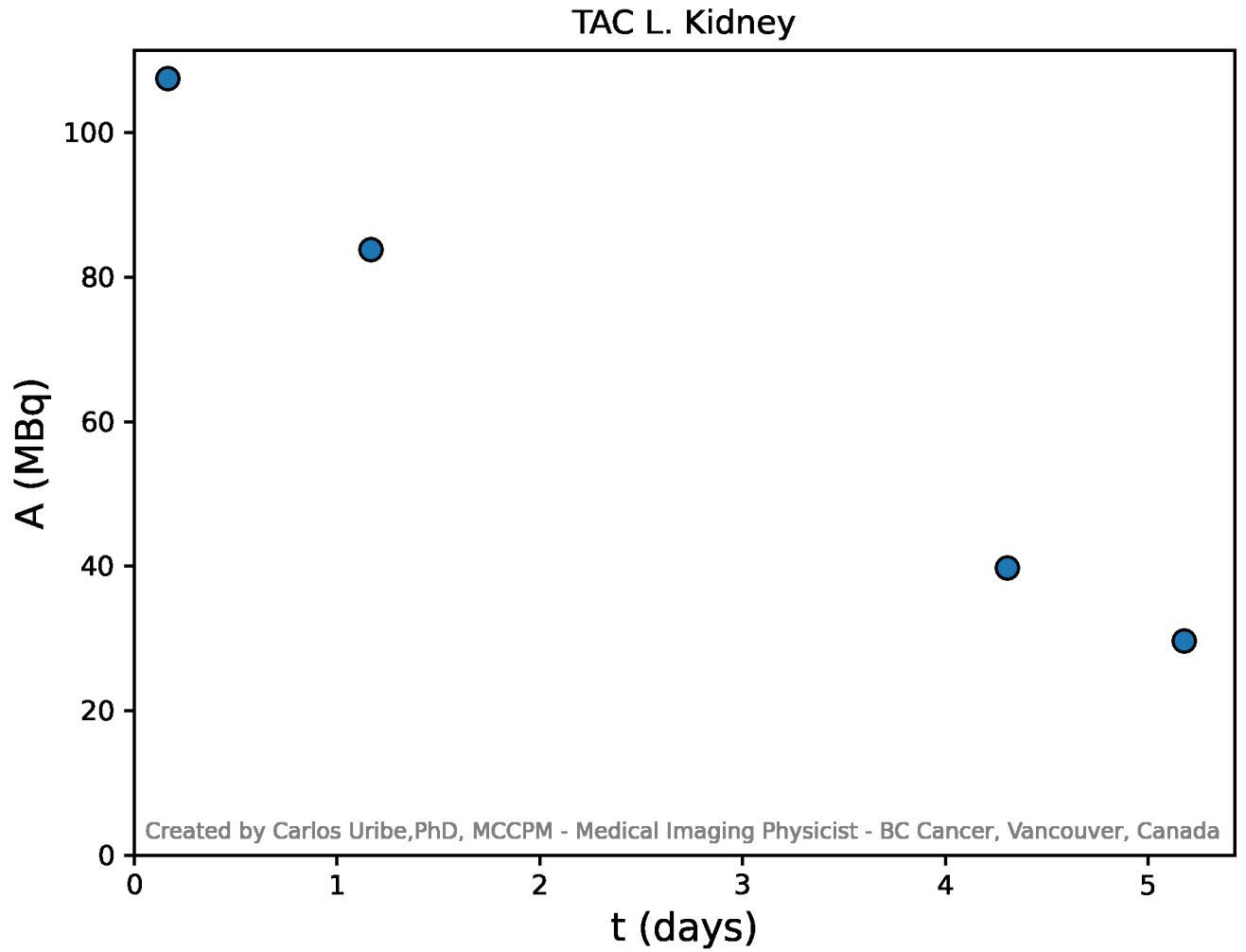
SPECT Day 0

SPECT Day 1



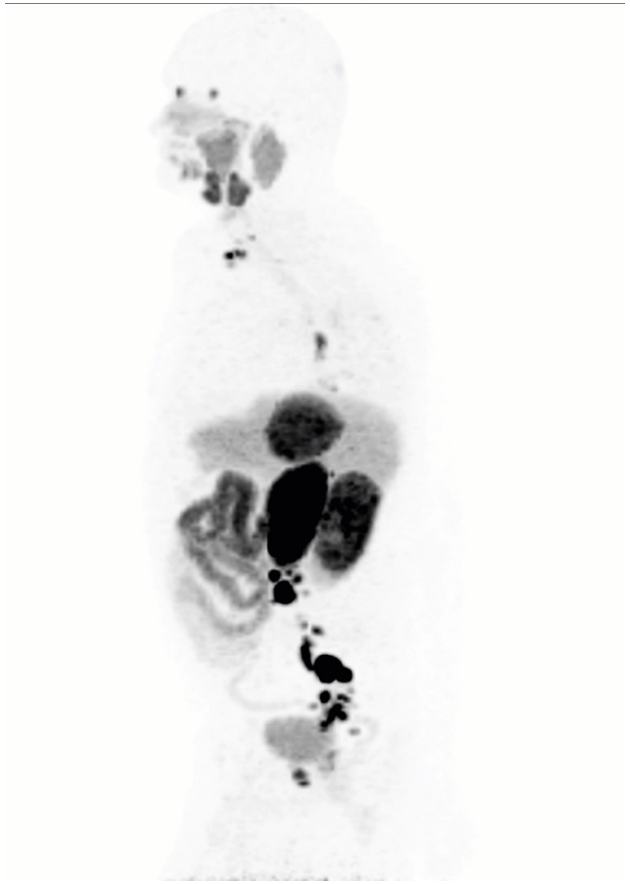
SPECT Day 4

SPECT Day 5

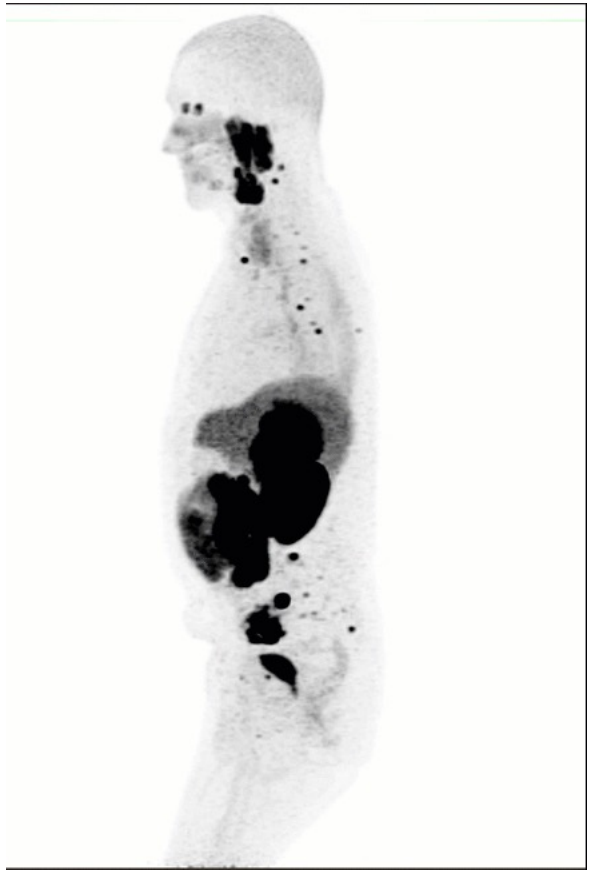


Patient specific

Mr. Ray Dioactive



Mr. Tom O’Graphy



Patient specific

Mr. Ray Dioactive

Injection	
Cycle	Activity [MBq]
1	7340
2	7700
3	7516
4	7908
5	7312
6	7432

Tumors	
Cycle	Absorbed Dose [Gy]
1	28.8
2	14.2
3	5.3
4	7.5
5	1.3
6	0.7
Total:	**57.8**

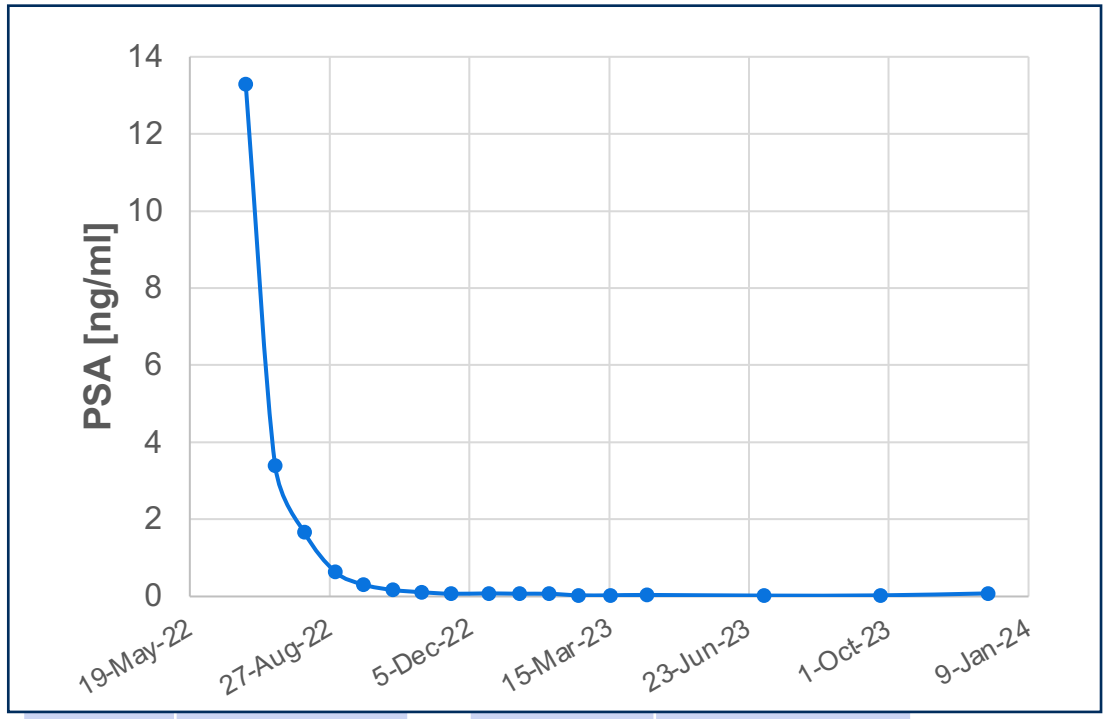
Mr. Tom O'Graphy

Injection	
Cycle	Activity [MBq]
1	8096
2	7357
3	8077
4	7795
5	7730
6	7384

Tumors	
Cycle	Absorbed Dose [Gy]
1	1.2
2	2.2
3	1.9
4	1.4
5	1.0
6	1.3
Total:	**9**

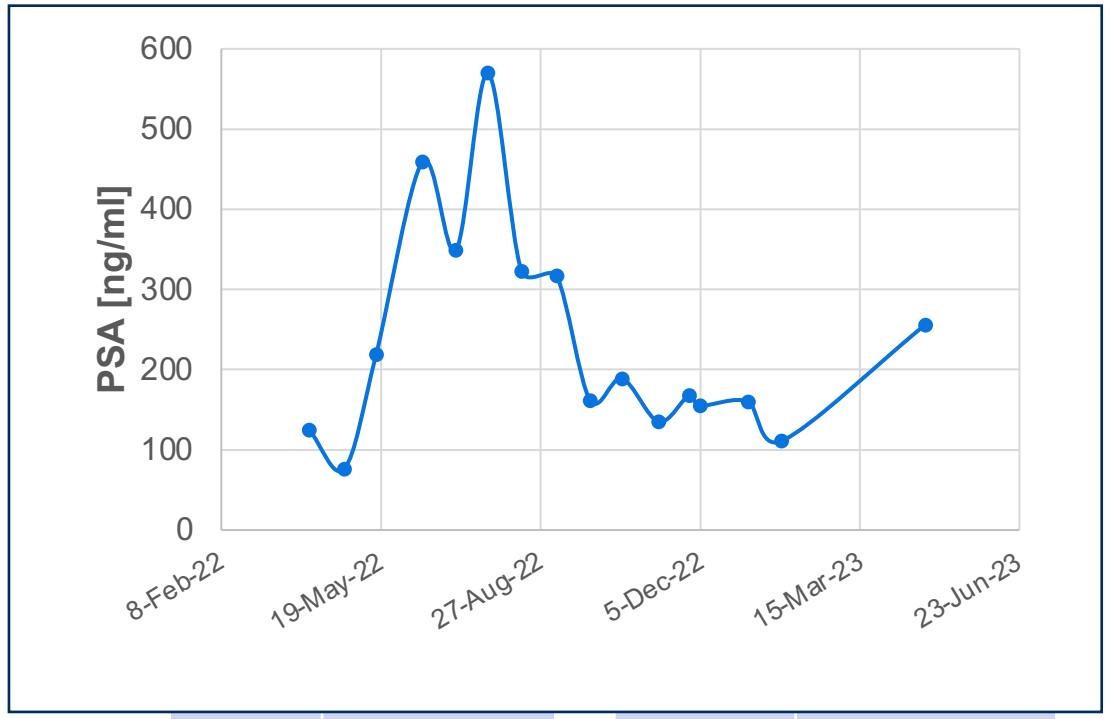
Patient specific

Mr. Ray Dioactive



		Total:	**57.8**

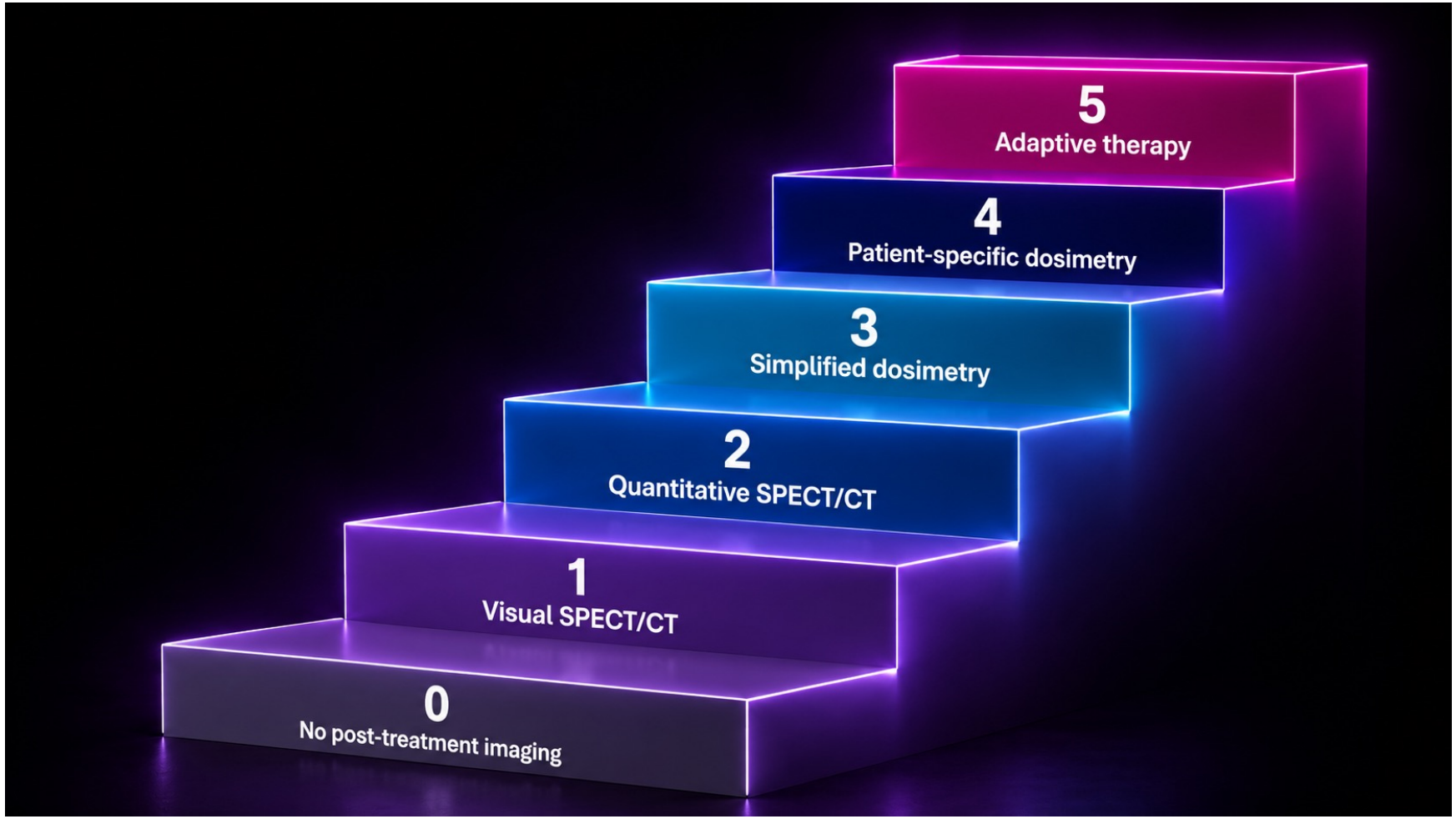
Mr. Tom O'Graphy



		Total:	**9**

Dosimetry is a staircase, not an on/off switch

Start where the clinical workflow can support it. Build toward adaptive therapy.



^{177}Lu-HTK03170 Trial

Lead Investigators:

- Don Wilson, MD
- Maryam Soleimani, MD
- Carlos Uribe, PhD, MCCPM

Journal of Nuclear Medicine, published on April 30, 2025 as doi:10.2967/jnumed.124.269064

A Phase I/II Study of [^{177}Lu]Lu-HTK03170 with Personalized Dosimetry in Patients with Metastatic Castration-Resistant Prostate Cancer: Clinical Trial Protocol

Sara Harsini[1], Maryam Soleimani[2], Don Wilson[1], Carlos Uribe[1,3], Heather Saprunoff[1], Ingrid Bloise[1], and Francois Benard[1,3]

[1]Department of Molecular Imaging and Therapy, BC Cancer, Vancouver, British Columbia, Canada; [2]Department of Medical Oncology, BC Cancer, Vancouver, British Columbia, Canada; and [3]Department of Radiology, University of British Columbia, Vancouver, British Columbia, Canada

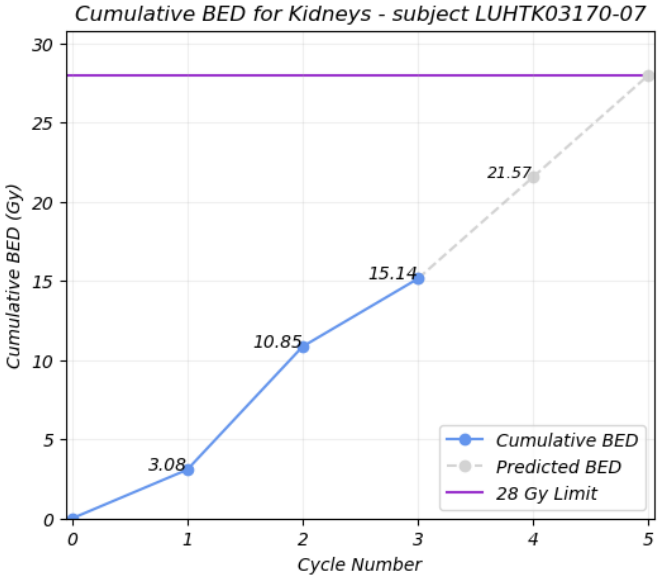
C1: 1.64 GBq, C2: 3.27 GBq , C3: 1.76 GBq)

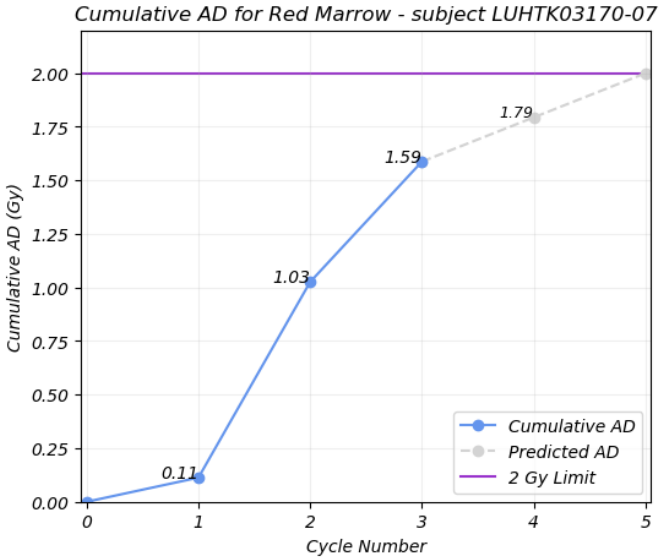
Pre-treatment

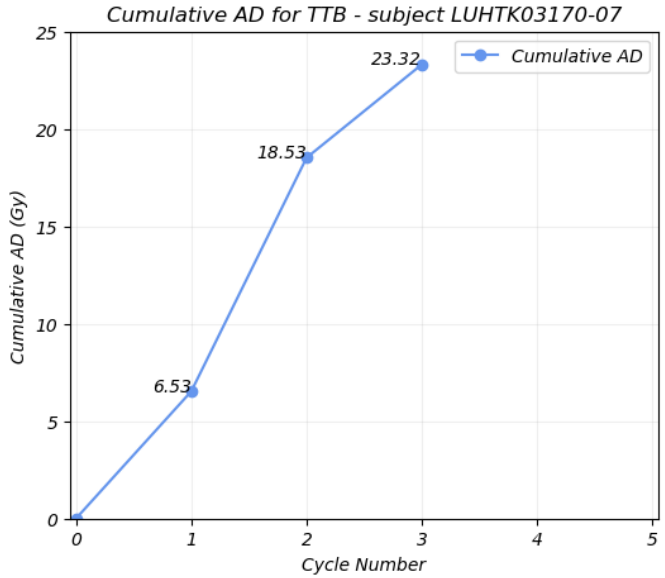
Cycle 1

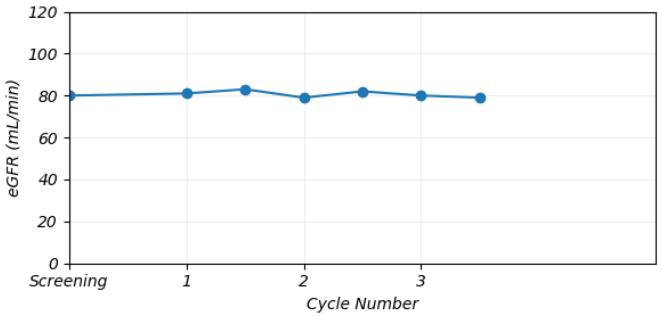
Cycle 2

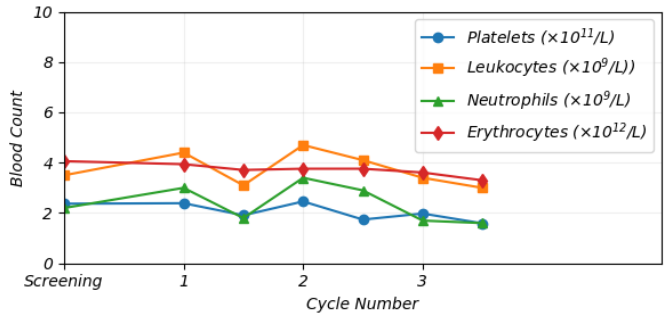
Cycle 3

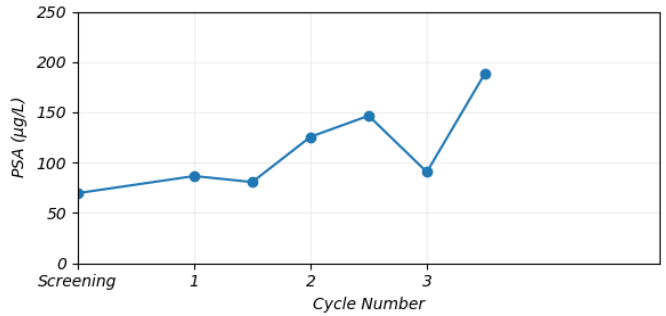




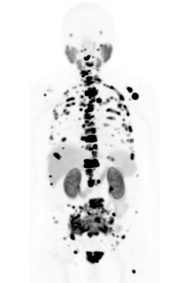








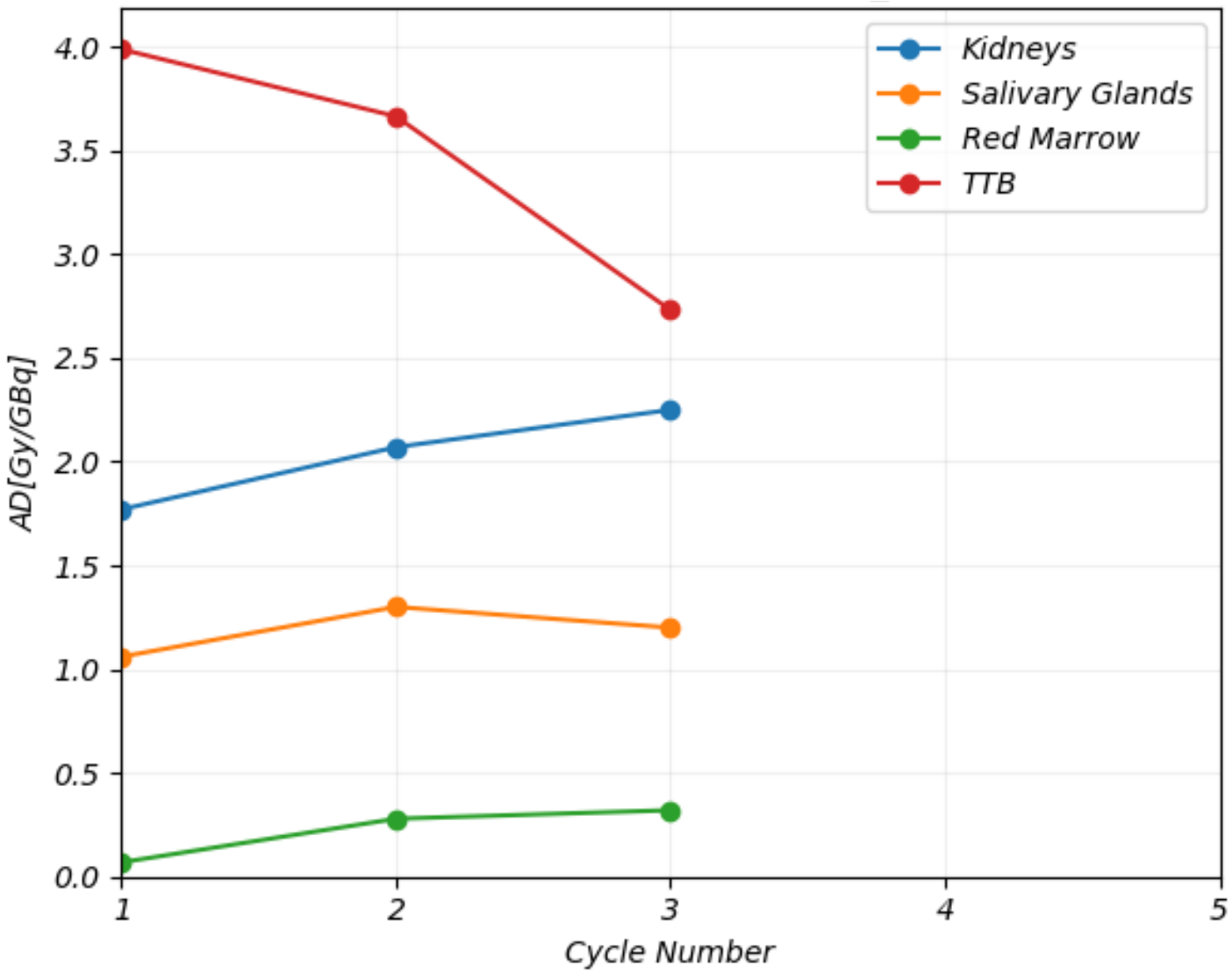
C1: 1.64 GBq, C2: 3.27 GBq , C3: 1.76 GBq)


Pre-treatment


Cycle 1


Cycle 2

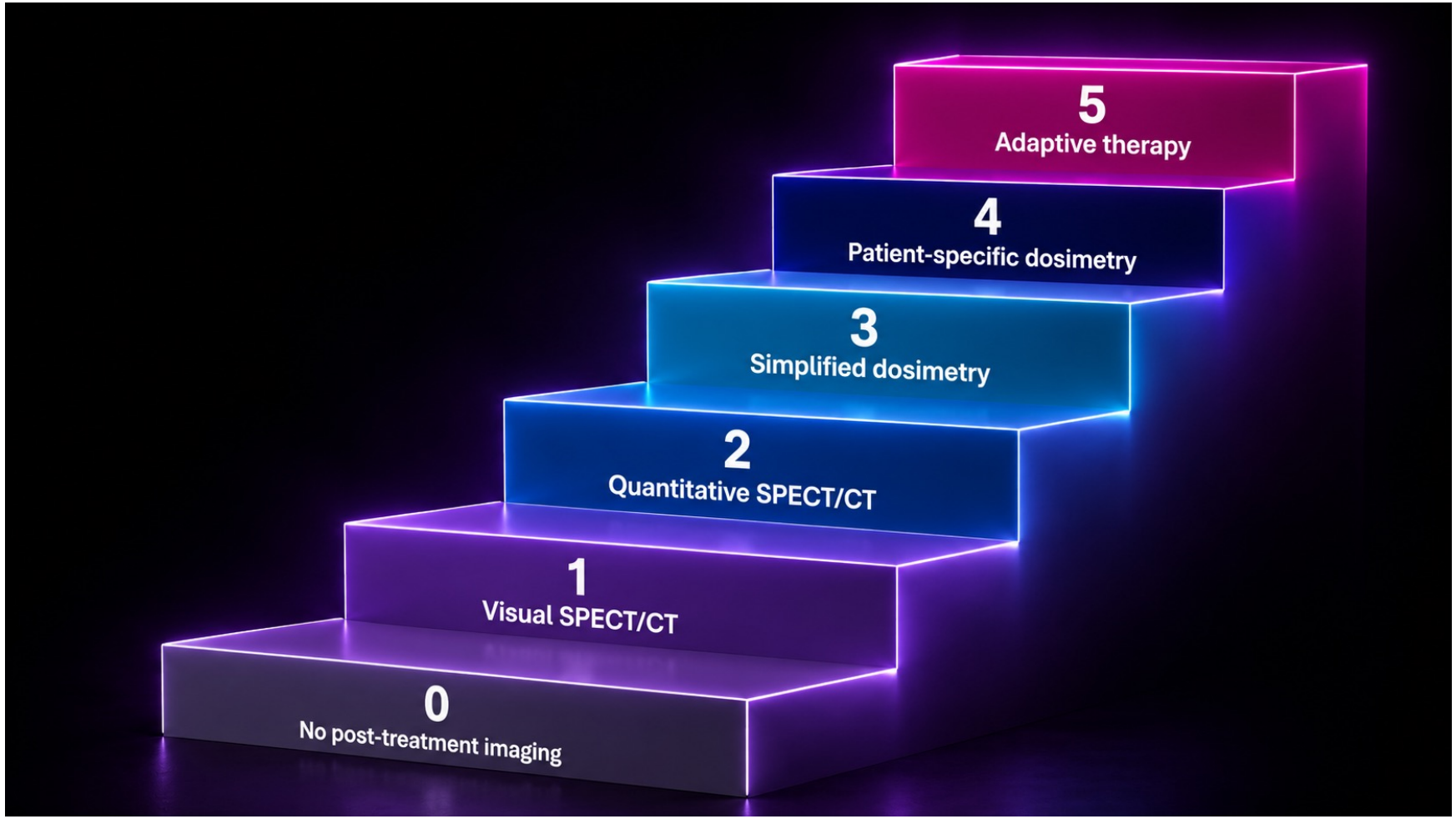

Cycle 3



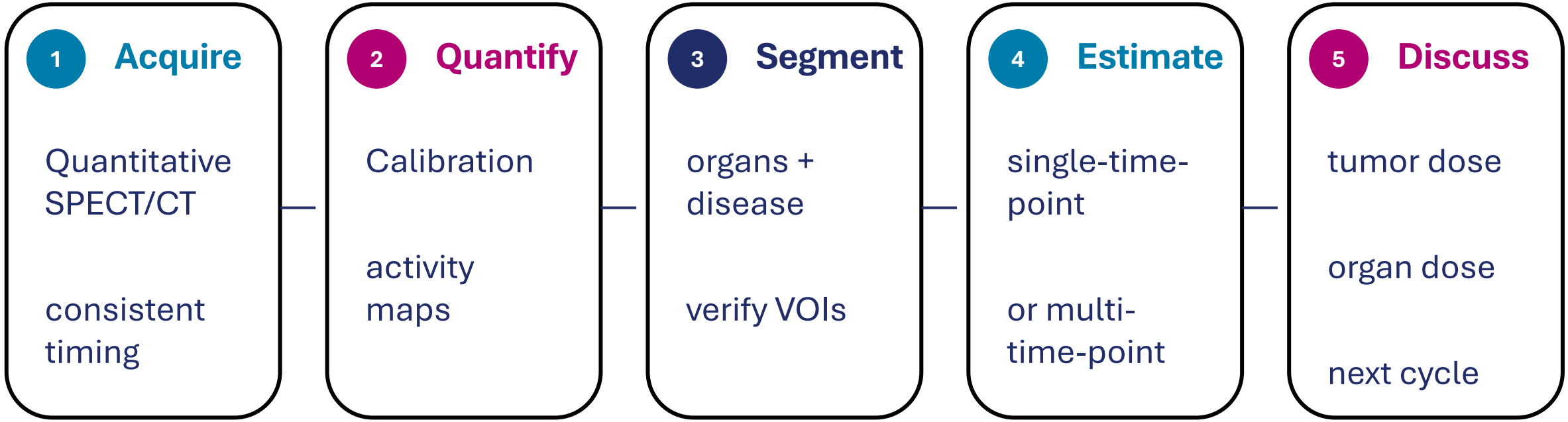
Carlos Uribe, PhD, MCCPM

Dosimetry is a staircase, not an on/off switch

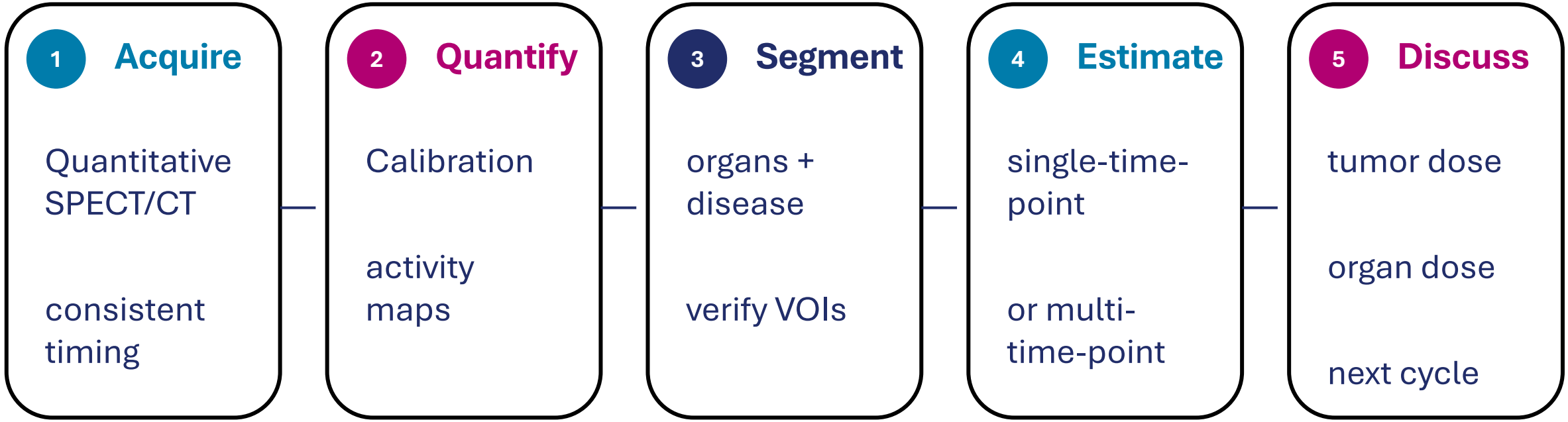
Start where the clinical workflow can support it. Build toward adaptive therapy.



A practical clinical dosimetry workflow can start simple



A practical clinical dosimetry workflow can start simple



The barrier is not that dosimetry is impossible. The barrier is deciding what level is appropriate for the decision.

Where should dosimetry be prioritized first?

- **Clinical trials and absorbed dose optimization studies**
- **Retreatment or extended-cycle decisions**
- **Patients with renal, marrow, or salivary-gland risk**
- **Absorbed dose escalation and de-escalation strategies**
- **Combination therapy with EBRT, chemotherapy, immunotherapy**
- **Alpha-emitter therapies and new agents**

Where should dosimetry be prioritized first?

- **Clinical trials and absorbed dose optimization studies**
- **Retreatment or extended-cycle decisions**
- **Patients with renal, marrow, or salivary-gland risk**
- **Absorbed dose escalation and de-escalation strategies**
- **Combination therapy with EBRT, chemotherapy, immunotherapy**
- **Alpha-emitter therapies and new agents**

Dosimetry does not need to be universal tomorrow to be clinically valuable today.

The debate should not be “dosimetry or not dosimetry”

The better question is:

What dosimetry is needed for this decision?

Routine imaging

visual + quantitative trends

Higher-risk patients

organ dose and cumulative dose

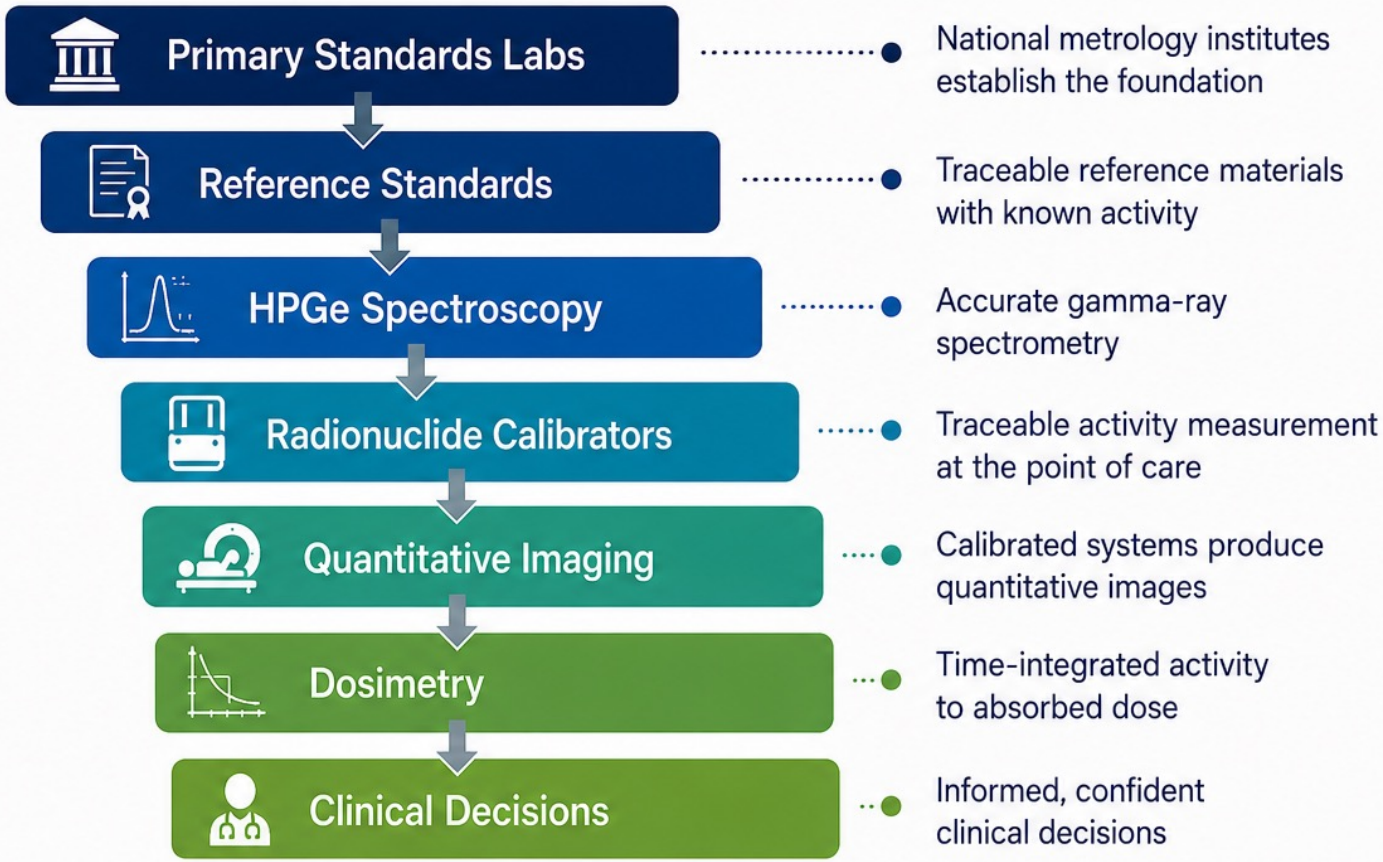
Trials / adaptation

patient-specific absorbed-dose planning

Take-home messages

- **Post-treatment imaging is how we stop being blind.**
- **Quantitative SPECT is how we stop being purely descriptive.**
- **Dosimetry is how we start adapting treatment.**
- **Dosimetry is the quantitative language that lets our field learn from every treatment**
- **The field does not need perfection to begin learning.**
- **If the mechanism is radiation, and therapy is imageable, absorbed dose should become part of the language of theranostics**

None of this works without trustworthy measurements



Thank you

Carlos Uribe,PhD, MCCPM | carlos.uribe@bccancer.bc.ca | BC Cancer / UBC / Qurit