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Status of PET-CT in Latin America and Brazil

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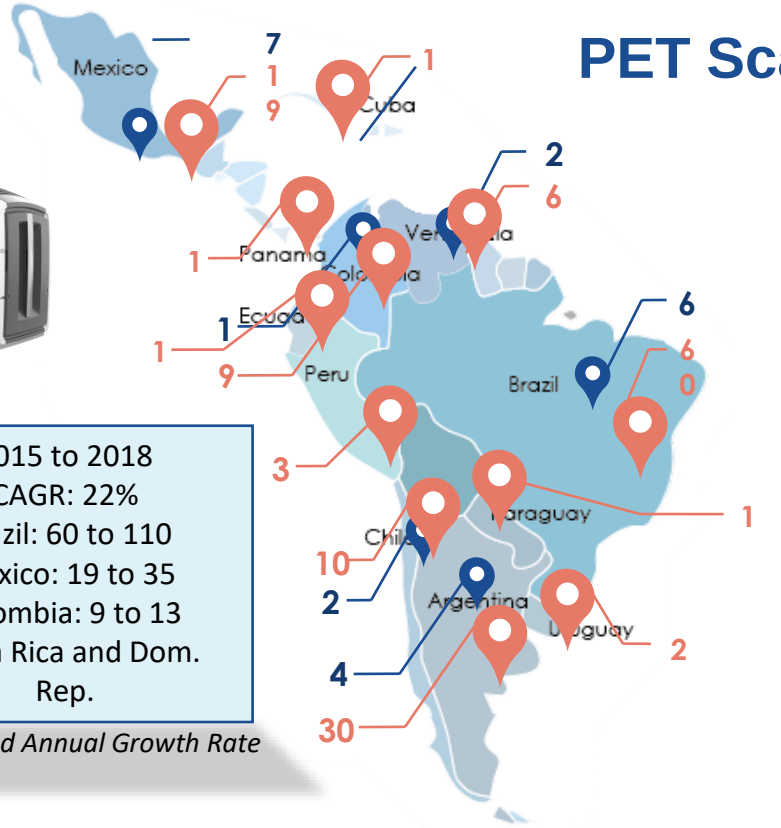
SBMN

I have no disclosures

PET Scanners in Latin America 2005-2015



2015 to 2018
CAGR: 22%
Brazil: 60 to 110
Mexico: 19 to 35
Colombia: 9 to 13
Costa Rica and Dom. Rep.

CAGR: Compound Annual Growth Rate

2005

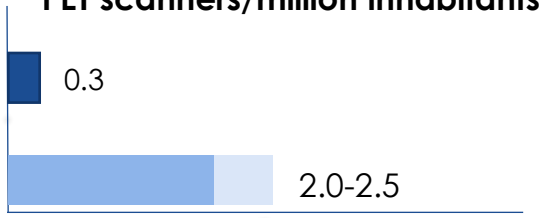
2015

Total 2005: 22

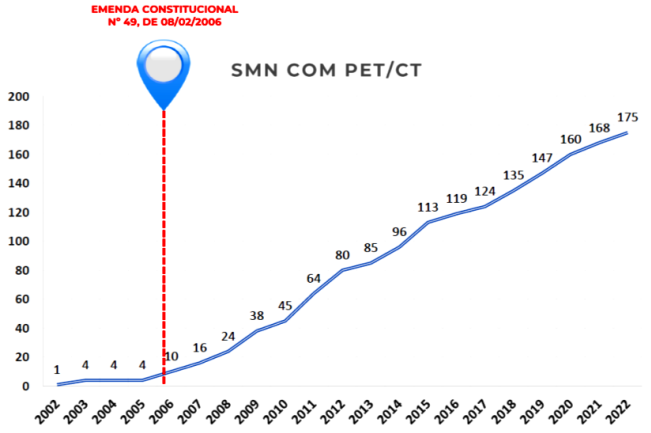
Total 2015: 144

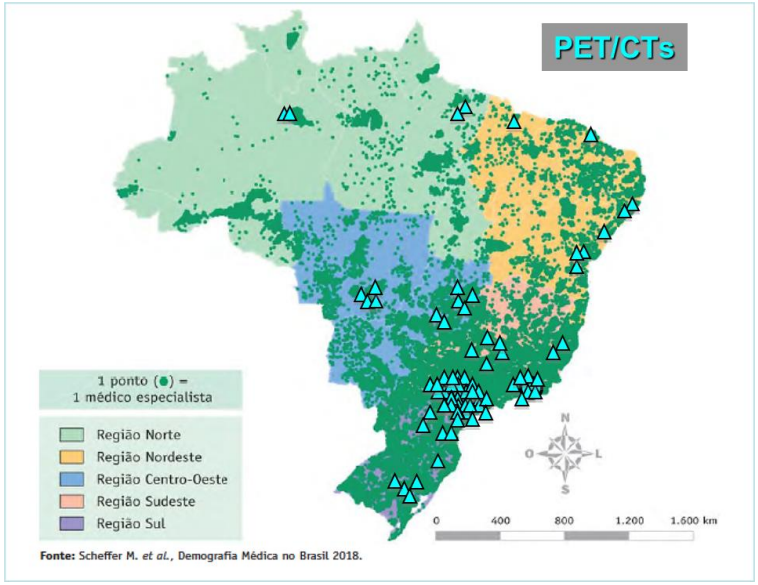
CAGR 22%

PET scanners/million inhabitants



IAEA Human Health Series N 11 (2010)
Planning a Clinical PET Centre





Source: Current Status of Nuclear Medicine Practice in Latin America and the Caribbean. Paez et al. J Nucl Med 2015

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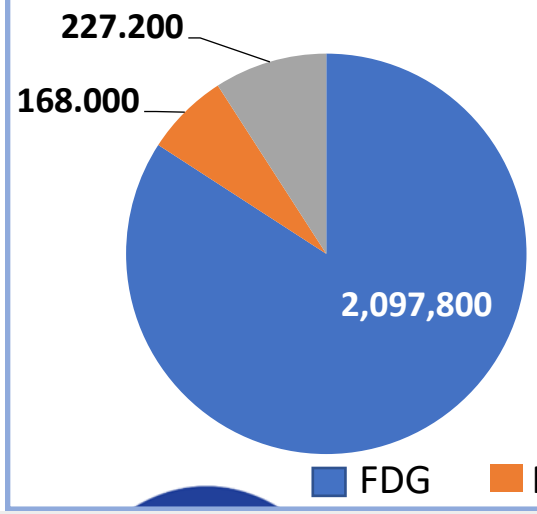
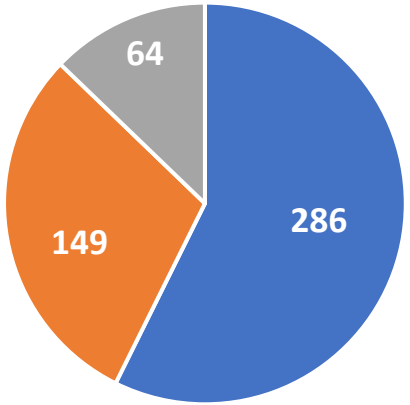
Current PET dynamics: USA & Lat Am

USA (Pop. 330M)

PET Doses*
Total: 2,493,000

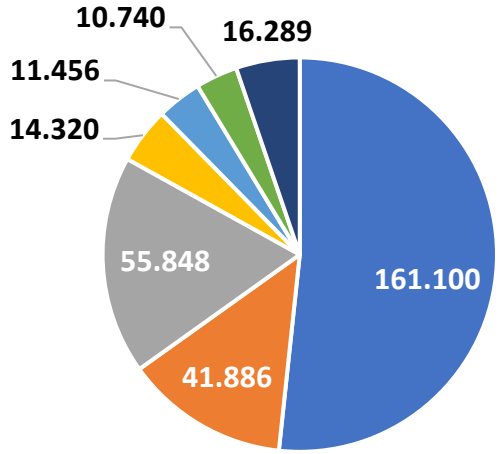


Revenue Doses ($M)
Total: 499

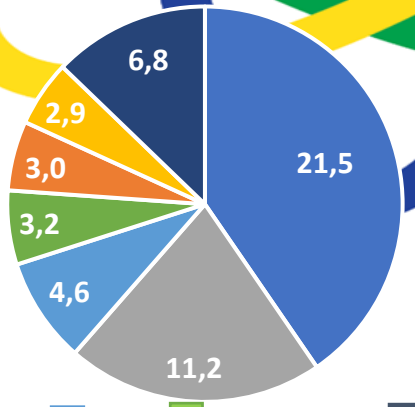


LATAM (Pop. 575M)

PET Doses**
Total: 310,000



Revenue Doses ($M)
Total: 53



ADOPTION CHALLENGES IN LAT AM

- No centralized regulatory agency (FDA or EMEA)
- Cyclotrons operating under own Quality Management System (QMS)
- Significant drug reimbursement price disparities between countries
- Decentralized tech transfer to each site

2,370
PET Scanners

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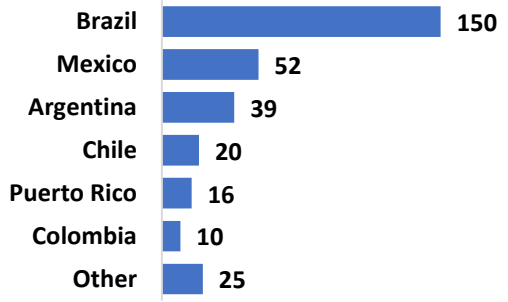
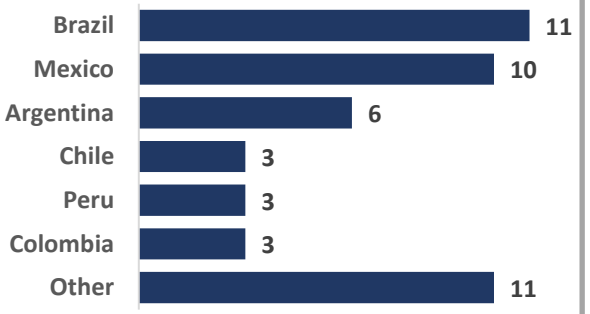
220
Cyclotrons

312 PET Scanners



47 Cyclotrons



BASICS: Image Analysis Tool

Beam:
- Was the x-ray beam centered on the area of interest?
- Was the tube angled correctly?
- Was equipment properly aligned to body part?

Artifacts:
- Is there anything obstructing the area of interest?
- Are positioning aids obscuring the anatomy?
- Is there excess quantum mottle/noise?
- Are there CR/DR processing errors present?

Shielding:
- Was gonadal protection indicated/ properly utilized?
- Was last menstrual period documented (when appropriate)?

Immobilization and Indicators:
- Was the selected technique based on measured body size?
- Are the Exposure Indicators/Deviation Index (EI/DI) in the appropriate range?
- How can you adjust for the next similar patient?
- Are artifacts, AEC, or field size changing the EI/DI?
- Could the baby, toddler, or child follow instructions?
- Could immobilization be used more effectively?
- Should our facility seek immobilization advice and training from a pediatric imaging facility?

Collimation:
- Was collimation appropriate?
- Was digital electronic post-collimation avoided?

Structures:
- Is all necessary anatomy included?
- Is there rotation present?
- Was the distance used appropriate?
- Is there evidence of patient motion?
- Were markers used correctly?
- Were grids used appropriately?

For more information about pediatric radiation safety, visit www.imagegently.org

Optimize utilization of FDG-PET/CT	Optimize protocols to reduce dose while maintaining sufficient image quality
Perform FDG-PET/CT only when clinically indicated • Use evidence-based guidelines for guidance (including American College of Radiology (ACR) Appropriateness Criteria®, Society of Nuclear Medicine and Molecular Imaging (SNMMI) Procedure Guidelines, European Association of Nuclear Medicine (EANM) Procedure Guidelines, National Comprehensive Cancer Network (NCCN) Clinical Practice Guidelines in Oncology, amongst others) • Implement use of decision support systems	PET related methods to reduce dose • Optimize/minimize injected dose of FDG • Encourage hydration and frequent voiding to reduce urinary bladder and adjacent pelvic organ radiation dose from FDG excretion • Use 3D PET emission acquisition mode • Use time-of-flight (TOF) information in image reconstruction • Increase duration of acquisition time per bed position
Use alternative non-ionizing radiation imaging technologies (ultrasonography (US), magnetic resonance imaging (MRI)) whenever possible	CT related methods to reduce dose • Minimize z-axis coverage whenever possible • Decrease tube voltage (kVp) • Decrease tube current and exposure time (mAs) • Increase pitch • Use automatic tube current modulation
Consider use of PET/MRI in place of PET/CT for certain clinical applications to reduce dose, although more research data is needed	
Perform routine quality assurance and quality control of imaging instrumentation and optimization of imaging protocols	
Monitor patient dose exposure from individual imaging examinations and on a cumulative basis	

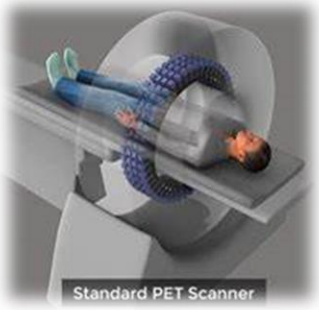
February 15, 2022

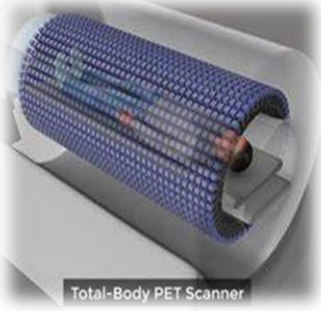
Suggestion for Dose Reduction of the PET/CT Imaging by Using the Generated Pseudo CT Image based on the Deep Learning

Authors: R. Fukui, S. Sakimoto, S. Fujii, H. Ninomiya, T. Ida, Y. Fujihara

December 20, 2022

PET and CT/CT-Fluoroscopy Contributions to Patient and Staff Radiation Dose in PET/CT-Guided Interventions





Optimizing Oncologic FDG-PET/CT Scans to Decrease Radiation Exposure

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2023 IMAGE® WISELY

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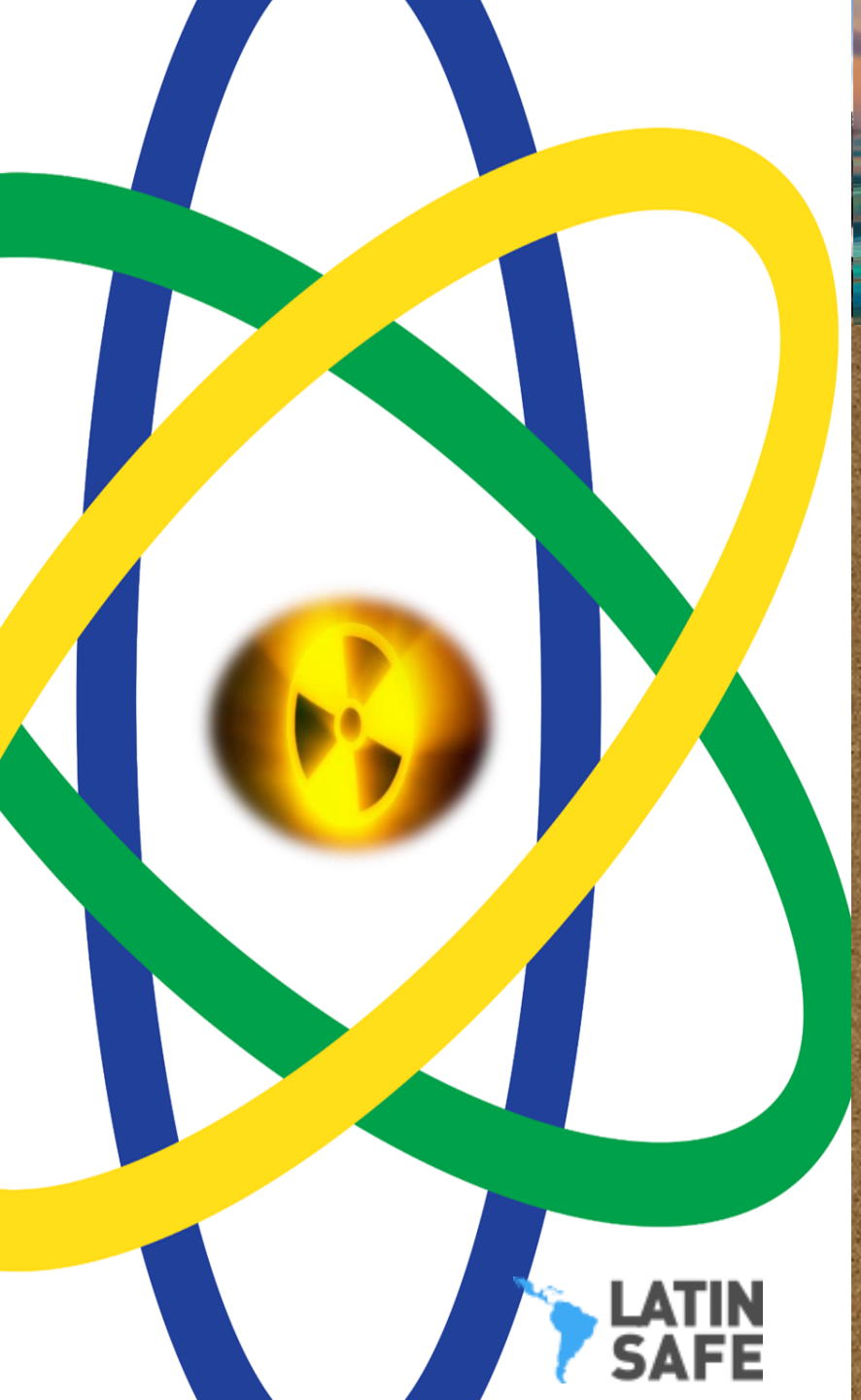


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CONGRESSO BRASILEIRO DE MEDICINA NUCLEAR
21 A 23 DE SETEMBRO DE 2023
ARMAÇÃO CONVENTION CENTER
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obrigado
Dank U
Merci
mahalo
Köszi
спасибо
Grazie
Thank you
mauruuru
Takk
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