

# Clinical case studies with AnyScan TRIO THERAMAX

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# TheraMAX detector



**Extreme Sensitivity of 1620 kcps/(MBq/cm<sup>3</sup>)**

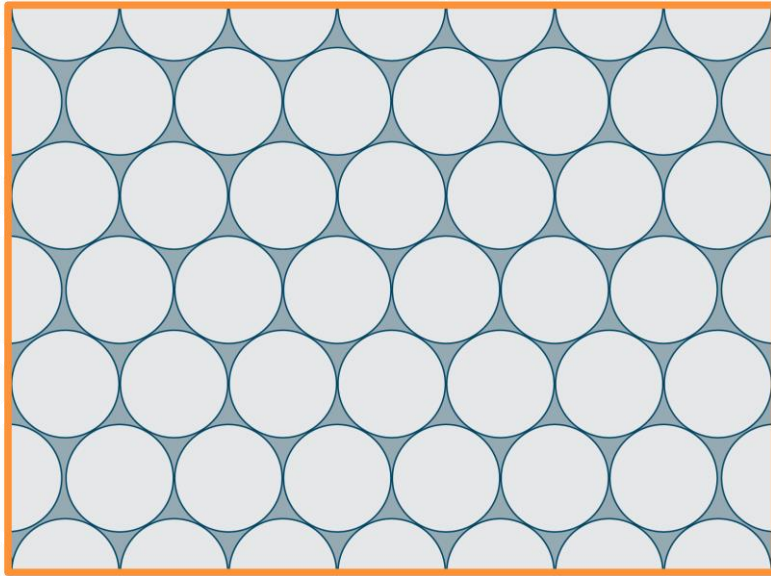


# TheraMAX

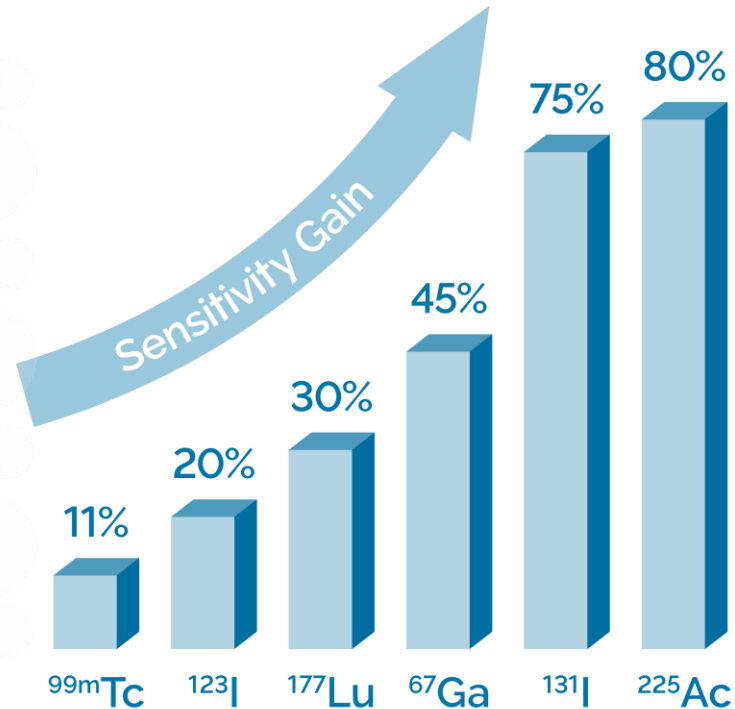


## Extreme Sensitivity with 15.9 mm Detector

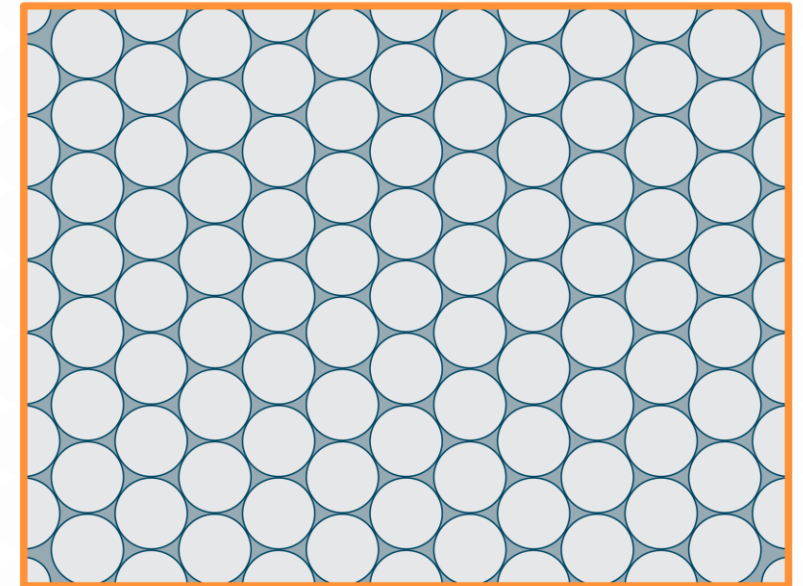
Intrinsic resolution: 3.4 mm



60 PMT / 9.5 mm crystal



Intrinsic resolution: 3.3 mm

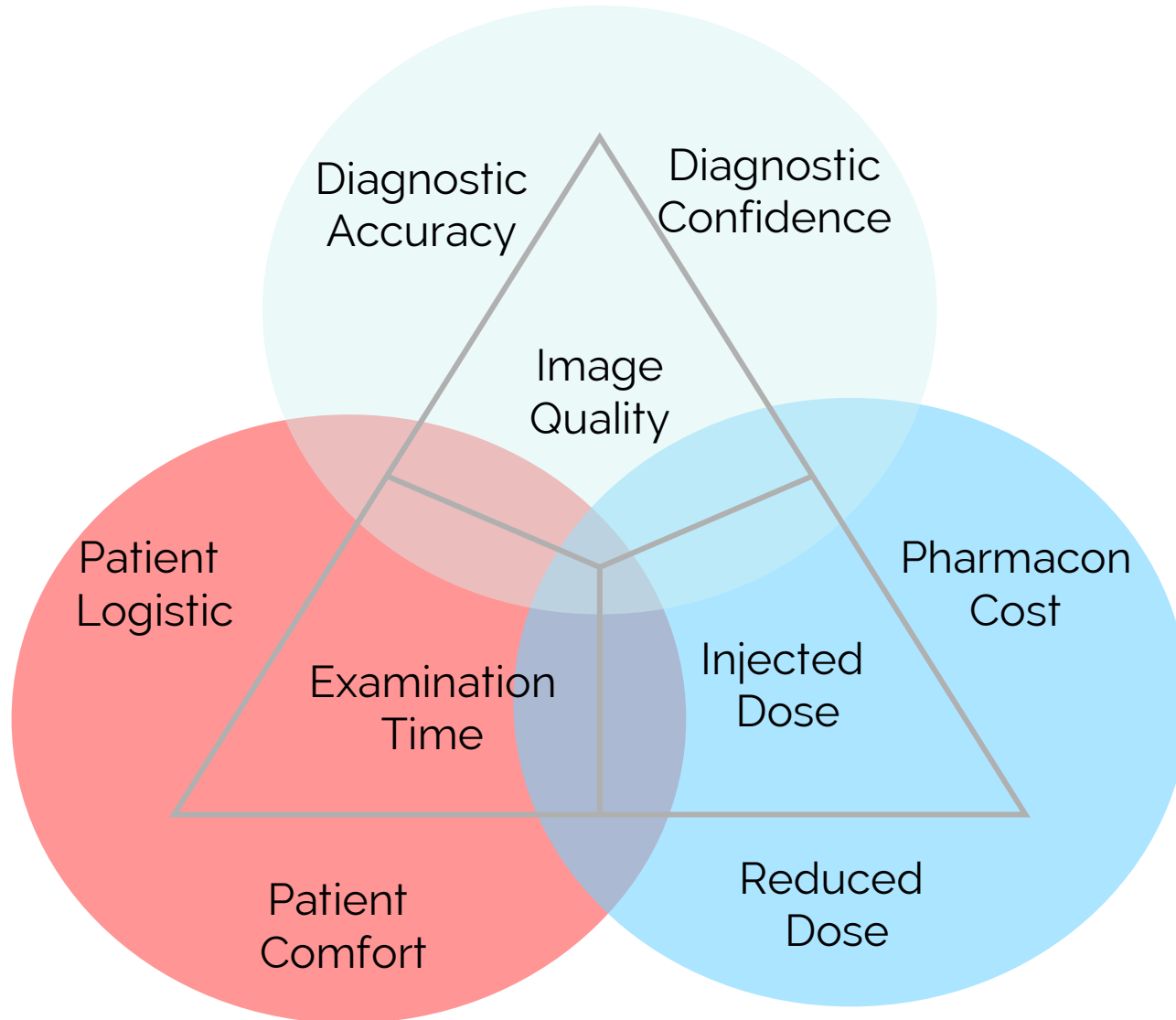


123 PMT / 15.9 mm crystal

- +50% more system sensitivity due 3<sup>rd</sup> detector
- +10%-70% even more sensitivity due new high sensitivity collimators and 15.9 mm crystal thickness
- Market leader focused MultiPinHole collimatos for Image Quality and Scan Time
- Designed for ultra fast routine and PET-Like SPECT/CT examinations for Total-Body and focused



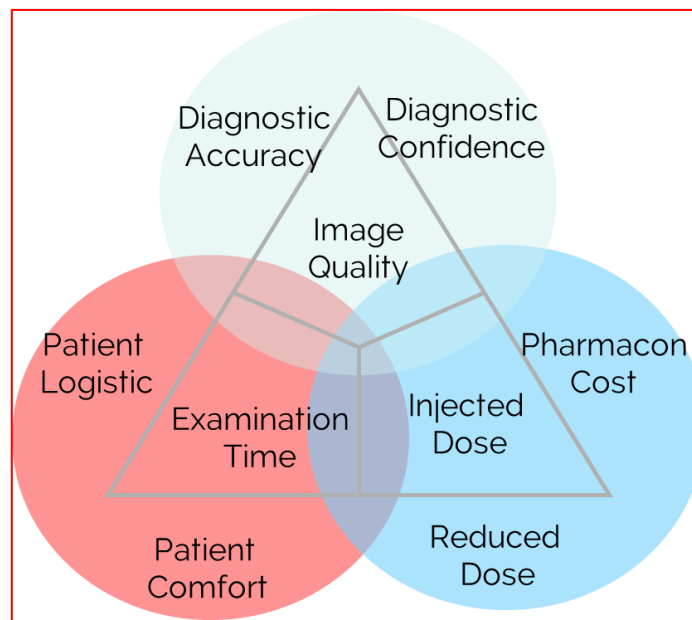
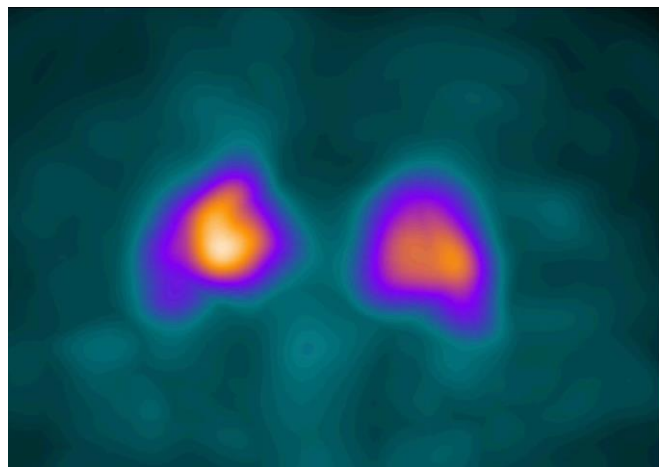
# New Triple-detector acquisition Protocol Optimization (Dual-/Triple Detectors SPECT)



# Maximized Image quality on dual-detector protocol



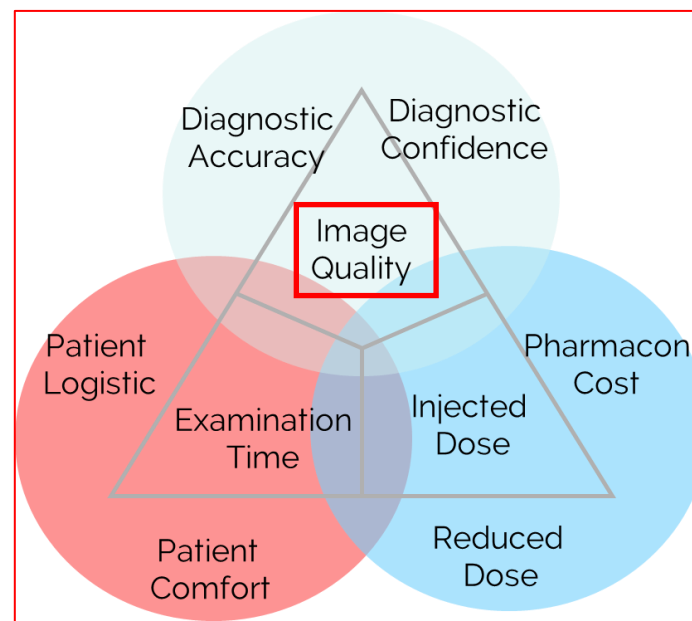
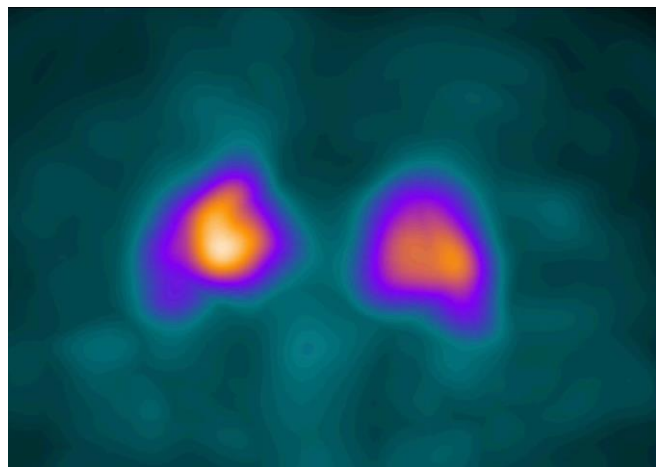
185MBq  $^{123}\text{I}$ -DatScan  
MEGP parallel-hole collimator  
120 view, 30 sec/view  
30 minutes



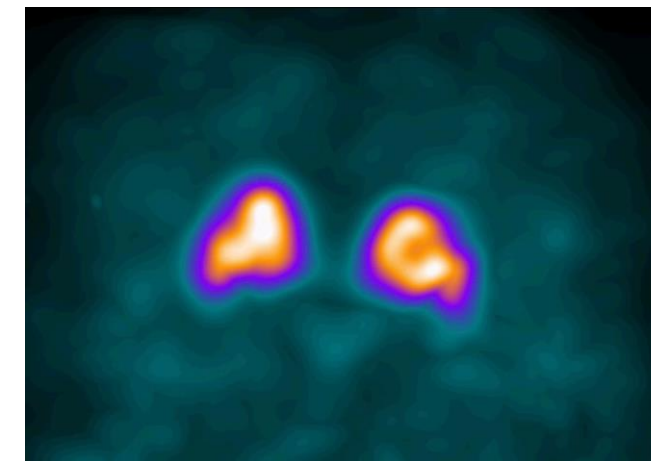
# Maximized Image quality on dual-detector protocol



185MBq  $^{123}\text{I}$ -DatScan  
MEGP parallel-hole collimator  
120 view, 30 sec/view  
30 minutes

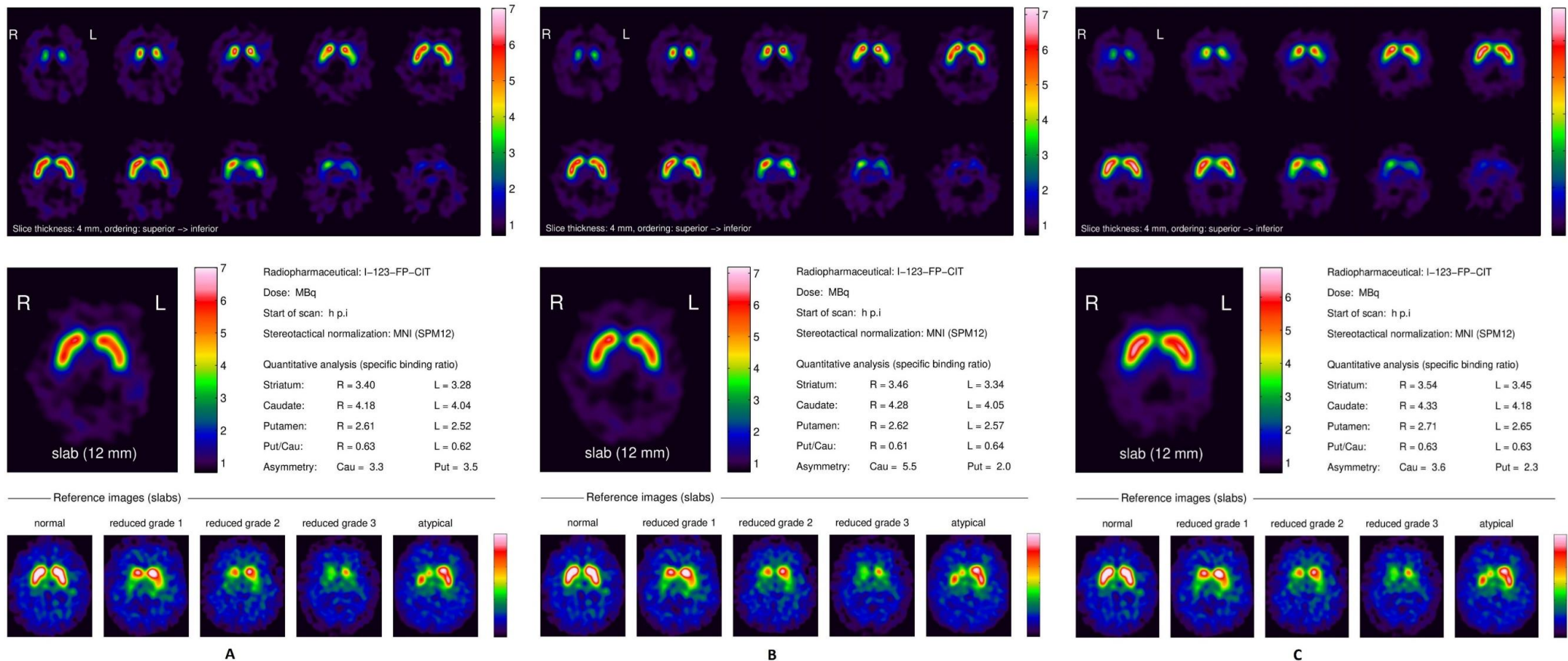


185MBq  $^{123}\text{I}$ -DatScan  
MPH-Brain collimator  
72 view, 75 sec/view,  
4cm Helical displacement  
30 minutes



# New Optimization protocols of MPH-Brain Datscan

29 LIST mode DATSCAN patients with Brain MPH-Brain collimator  
Cut the images to 10min, 15min and Original (30min) scan length images  
Five nuclear medicine specialist should try to find the scan length of images (A-B-C)  
In other comparison the specialist should find the grade of the solo images (1/3, 1/2 and full time)



# Multi-PinHole Datscan statistical analysis



| Doctor | tau-b  | Kendall's   |       |        |
|--------|--------|-------------|-------|--------|
|        |        | Confid. Iv. |       | p      |
| A      | 0,386  | 0,184       | 0,581 | <0.001 |
| B      | -0,034 | -0,236      | 0,164 | 0,723  |
| C      | 0,018  | -0,186      | 0,226 | 0,865  |
| D      | 0,454  | 0,282       | 0,617 | <0.001 |
| E      | -0,064 | -0,278      | 0,151 | 0,561  |
| Total  | 0,22   | 0,035       | 0,391 | 0,012  |

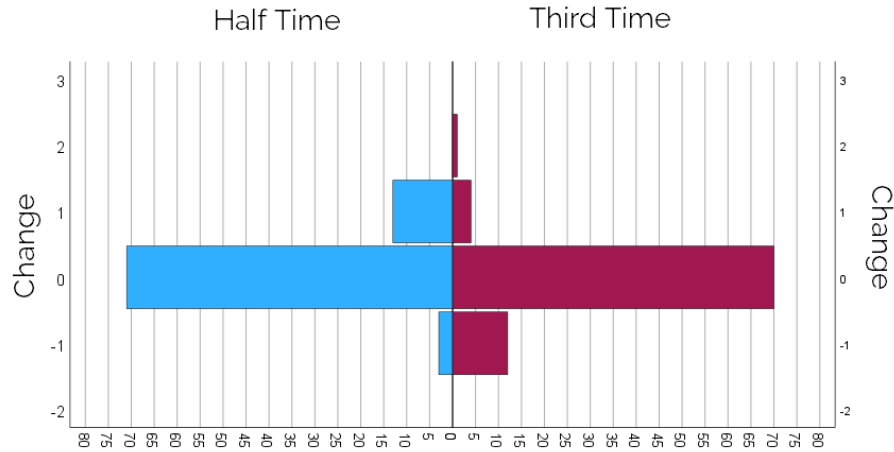
| Real:  | Full | Half | Third | Max: |
|--------|------|------|-------|------|
| A      | 15   | 19   | 21    | 29   |
| B      | 8    | 3    | 6     |      |
| C      | 9    | 14   | 13    |      |
| D      | 12   | 11   | 23    |      |
| E      | 8    | 17   | 13    |      |
| Total: | 52   | 64   | 76    | 145  |

| Bet |       | Full | Half | Third | Total |
|-----|-------|------|------|-------|-------|
|     | Full  | 52   | 63   | 29    | 144   |
|     | Half  | 41   | 64   | 40    | 145   |
|     | Third | 52   | 18   | 76    | 146   |
|     | Total | 145  | 145  | 145   | 435   |

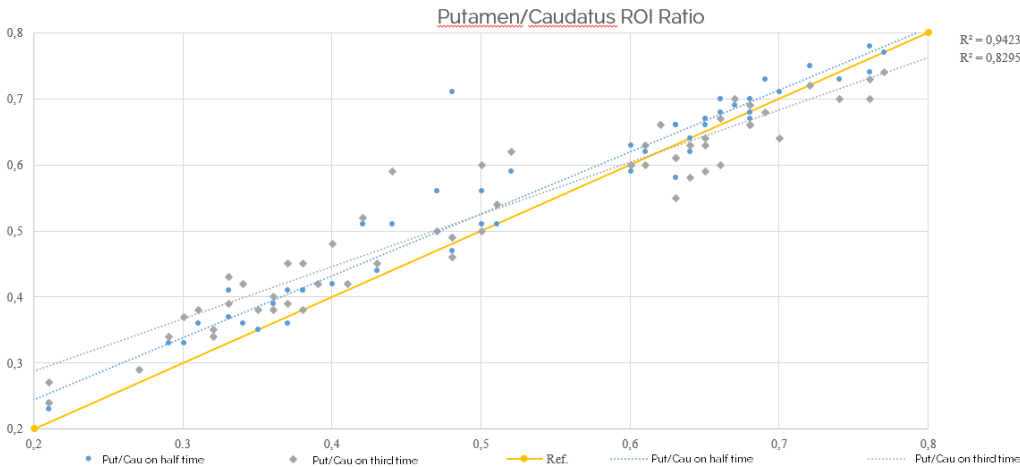
correlation of responses with the real

How many times found it?

What we bet for images?



Results of grades

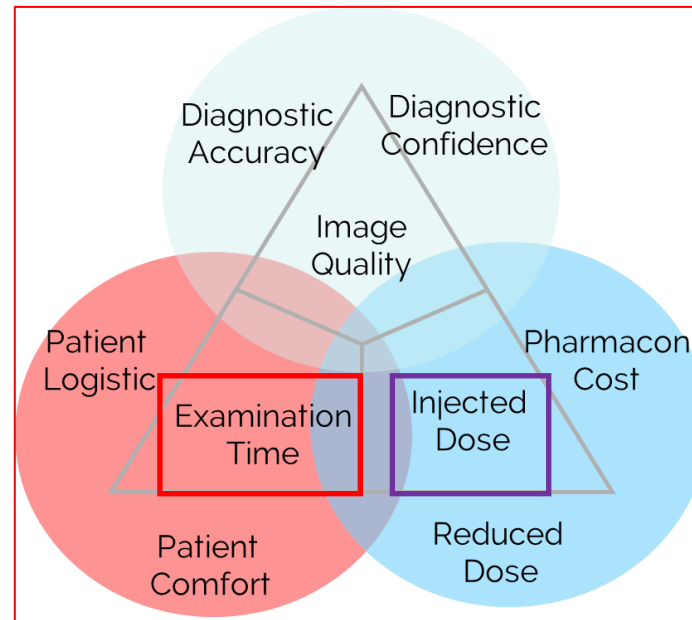
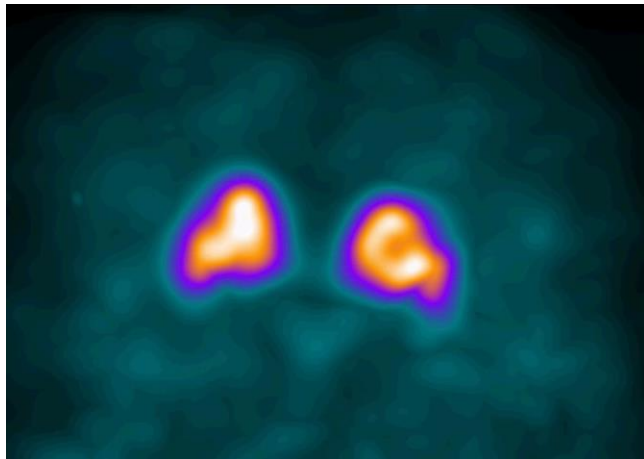


Automatic ROI analysis results

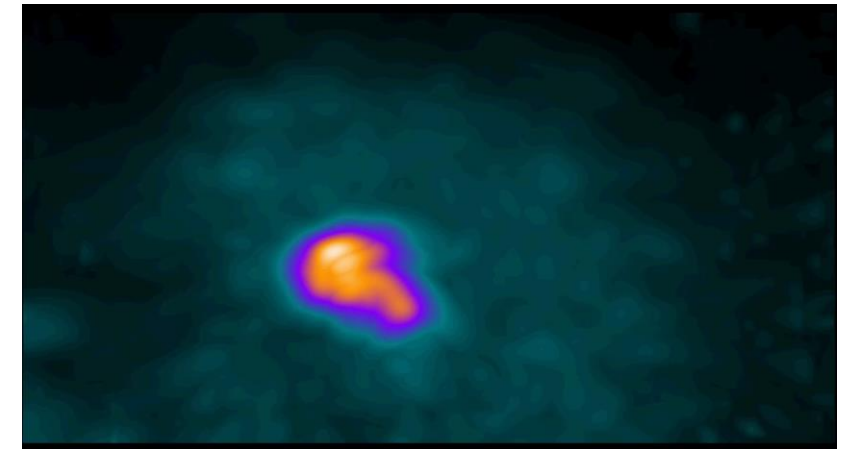
# Multi-PinHole Datscan Examination Time or Injected Dose



185MBq  $^{123}\text{I}$ -DatScan  
Brain Multi-Pinhole collimator  
25 view, 75 sec/view, 4cm Helical displacement  
**10 minutes**

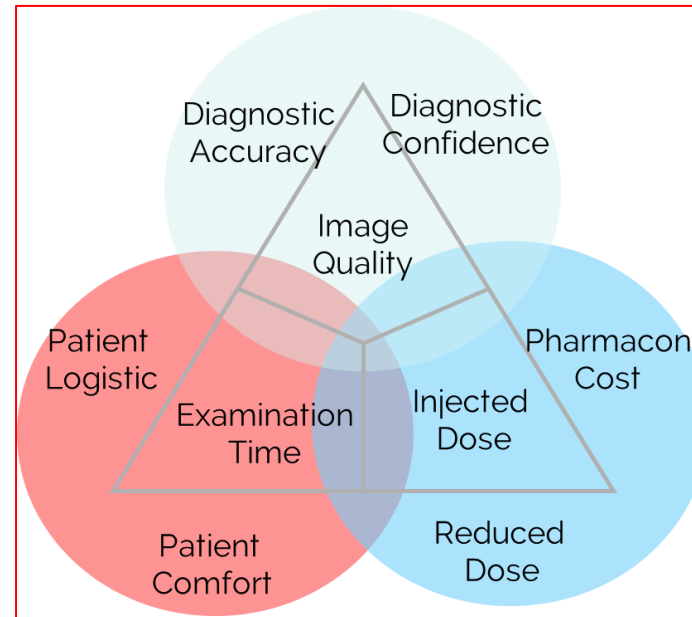
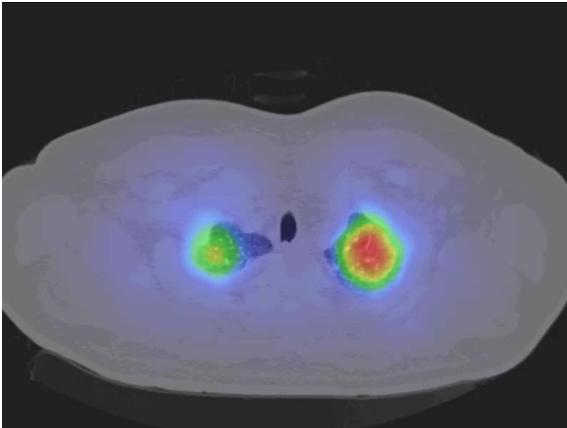


**60MBq**  $^{123}\text{I}$ -DatScan  
Brain Multi-Pinhole collimator  
75 view, 75 sec/view, 4cm Helical displacement  
**30 minutes**





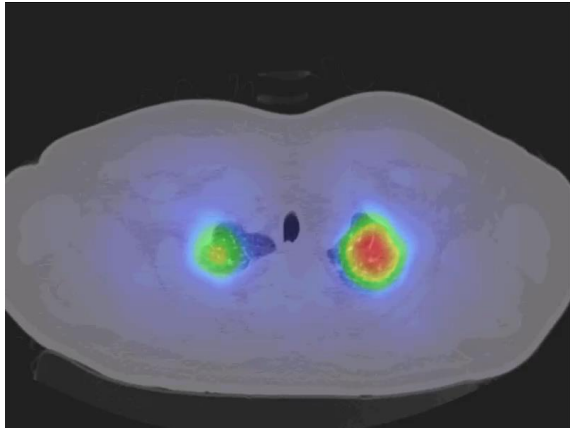
256MBq  $^{99m}\text{Tc}$ -MAA  
LEHR-HS collimator  
120 view, 12 sec/view  
12 minutes



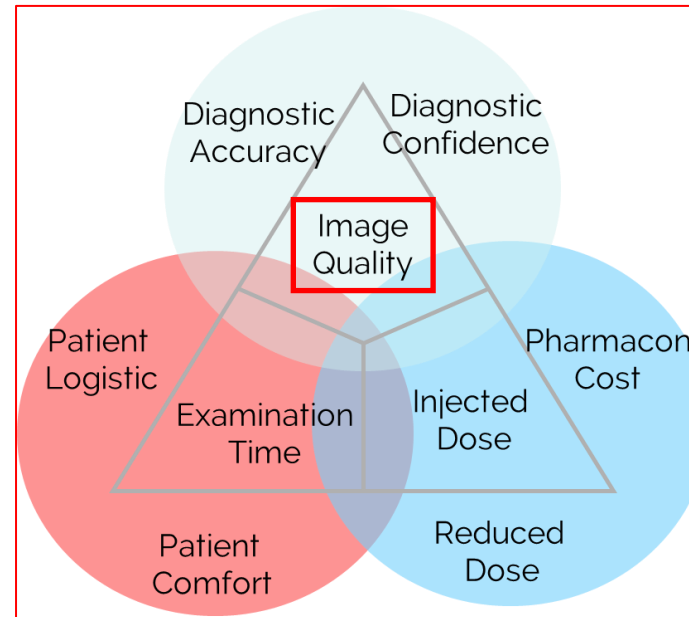
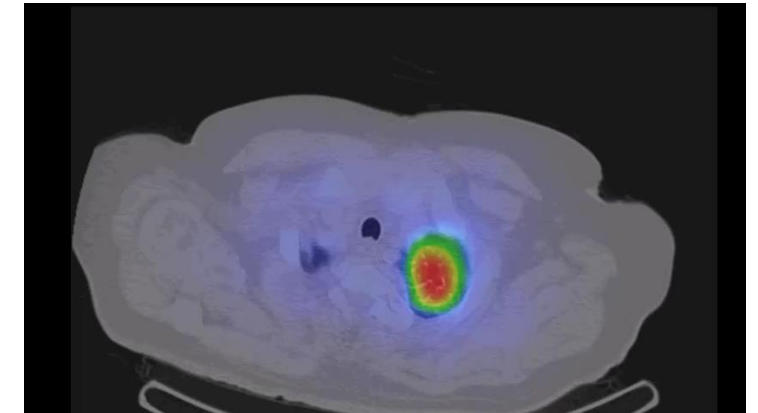
# Lung perfusion



256MBq  $^{99m}\text{Tc}$ -MAA  
LEHR-HS collimator  
120 view, 12 sec/view  
12 minutes

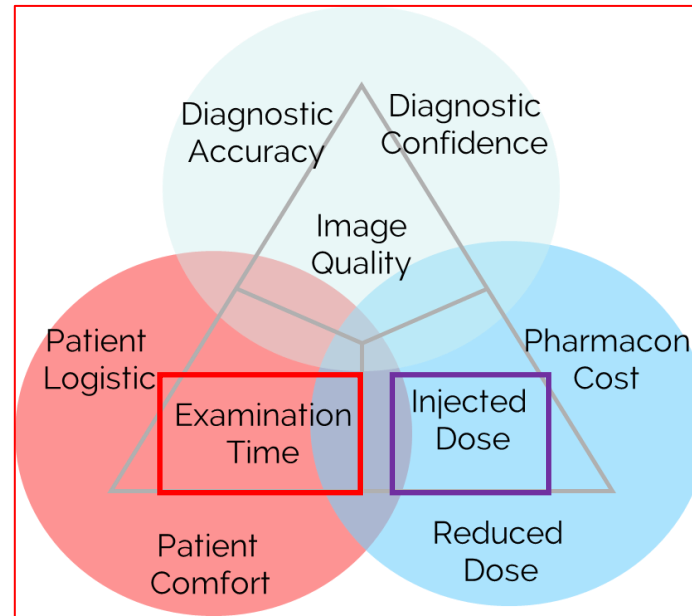
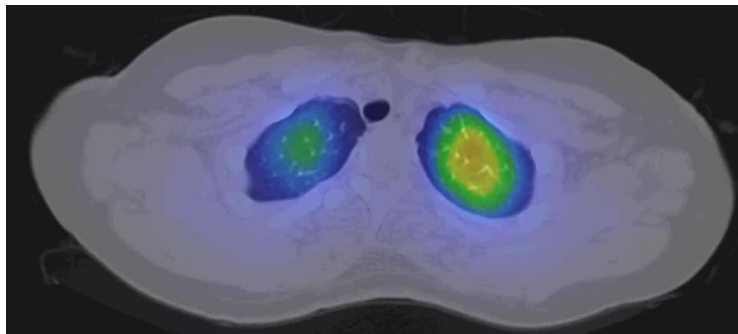


248MBq  $^{99m}\text{Tc}$ -MAA  
LEHR-HS collimator  
120 view, 12 sec/view  
8 minutes

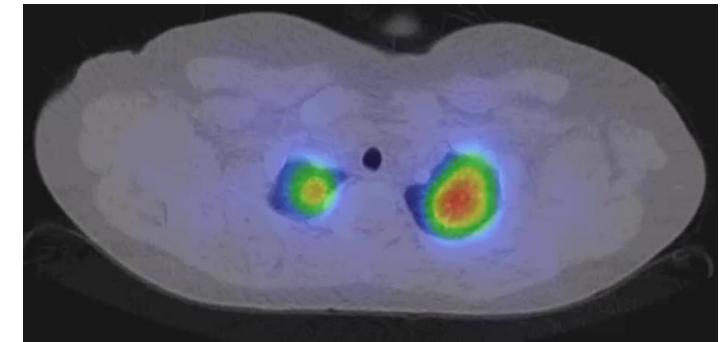




171MBq  $^{99m}\text{Tc}$ -MAA  
LEHRHScollimator  
120 view, 5 sec/view,  
**4 minutes**



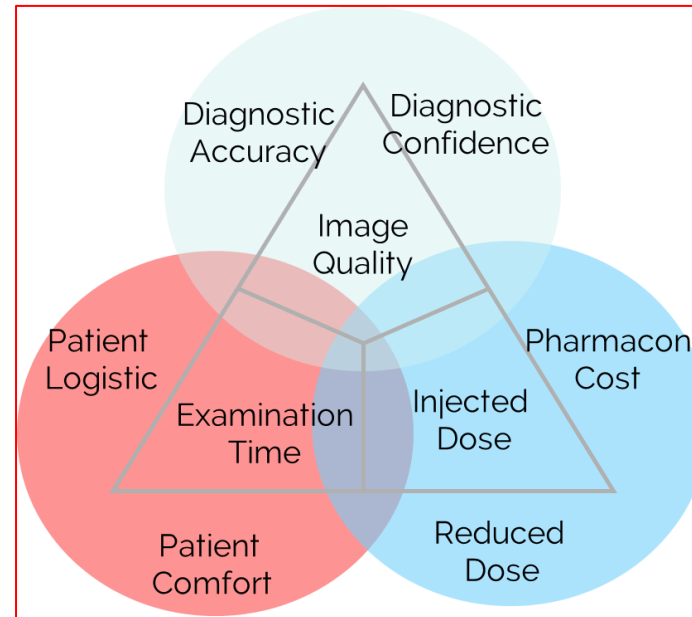
**121MBq**  $^{99m}\text{Tc}$ -MAA  
LEHRHScollimator  
120 view, 12 sec/view,  
**8 minutes**



# SomatoStatin Receptor Scintigraphy



600MBq  $^{99m}\text{Tc}$ -Tektrotyd  
LEHR-HS collimator  
120 view, 15 sec/view  
12 minutes/FOV



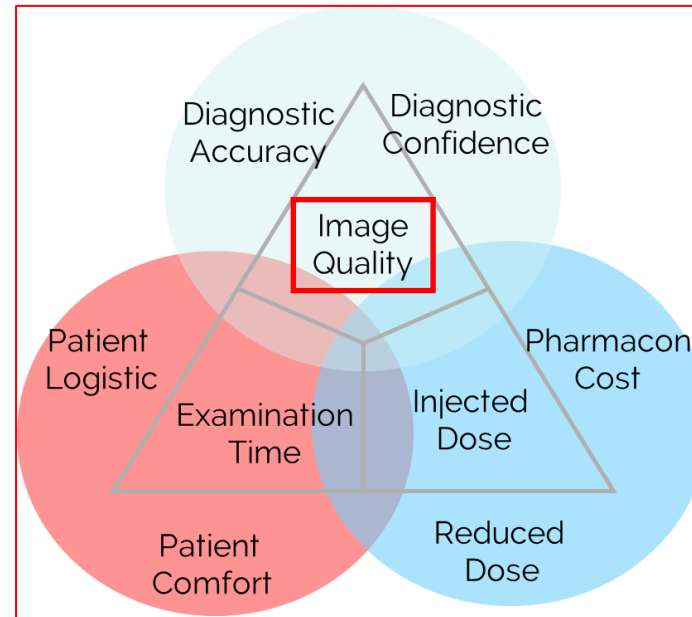
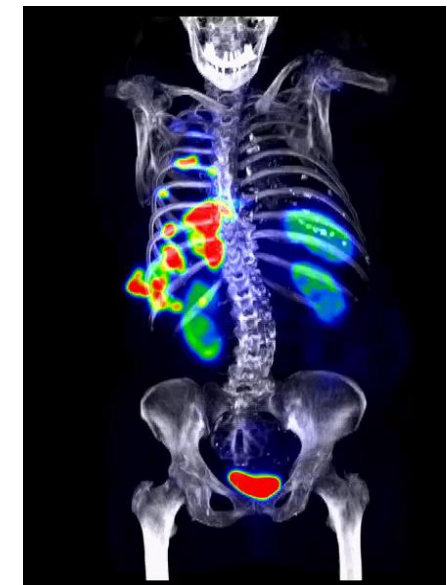
# SomatoStatin Receptor Scintigraphy



600MBq  $^{99m}\text{Tc}$ -Tektrotyd  
LEHR-HS collimator  
120 view, 15 sec/view  
12 minutes/FOV



600MBq  $^{99m}\text{Tc}$ -Tektrotyd  
LEHR-HS collimator  
120 view, 12 sec/view  
8 minutes



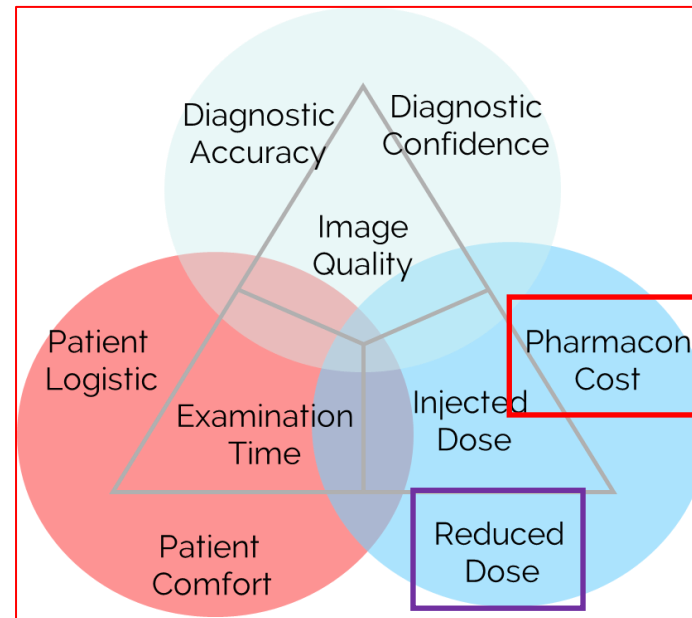
# SomatoStatin Receptor Scintigraphy



**311MBq**  $^{99m}\text{Tc}$ -Tektrotyd  
LEHR-HS collimator  
120 view, 3 sec/view  
4 minutes/FOV

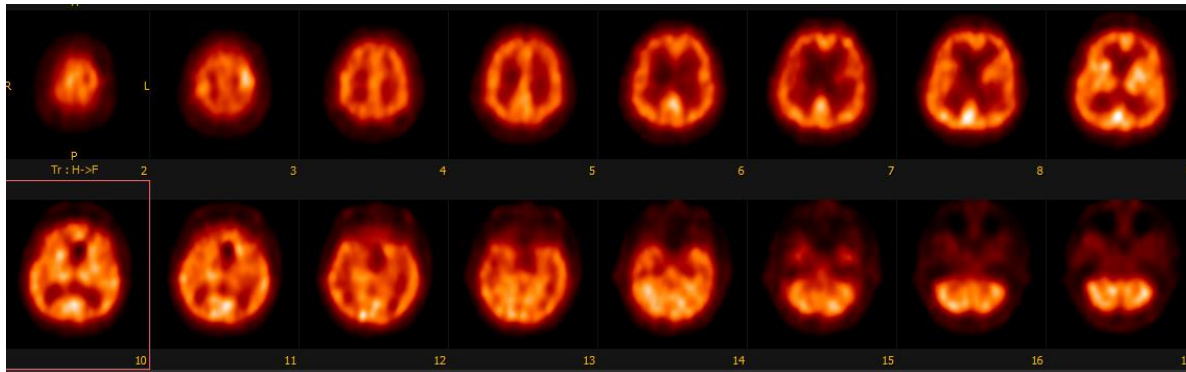
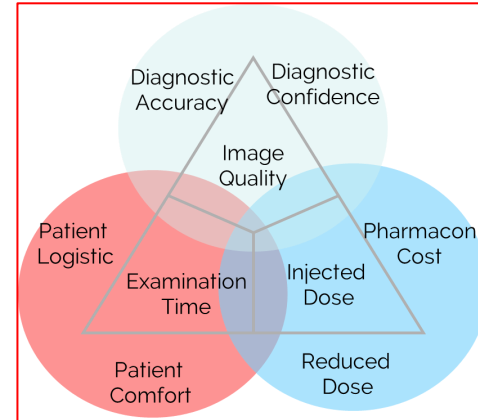


**137MBq**  $^{99m}\text{Tc}$ -Tektrotyd  
LEHR-HS collimator  
120 view, 12 sec/view  
8 minutes/FOV



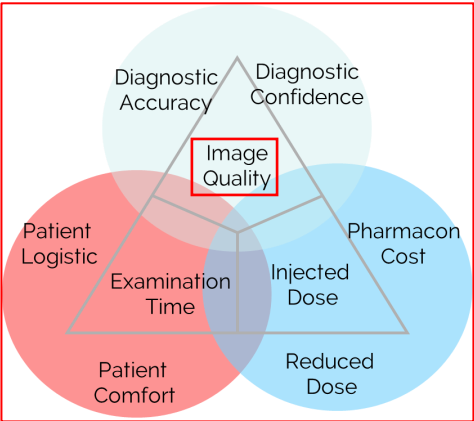


792MBq  $^{99m}\text{Tc}$ -HMPAO  
LEHR-HS collimator  
120 view, 30 sec/view  
30 minutes

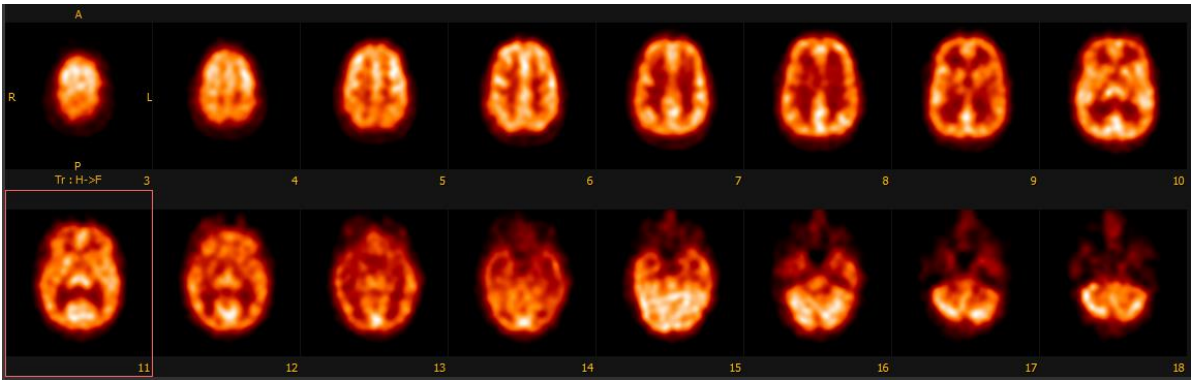
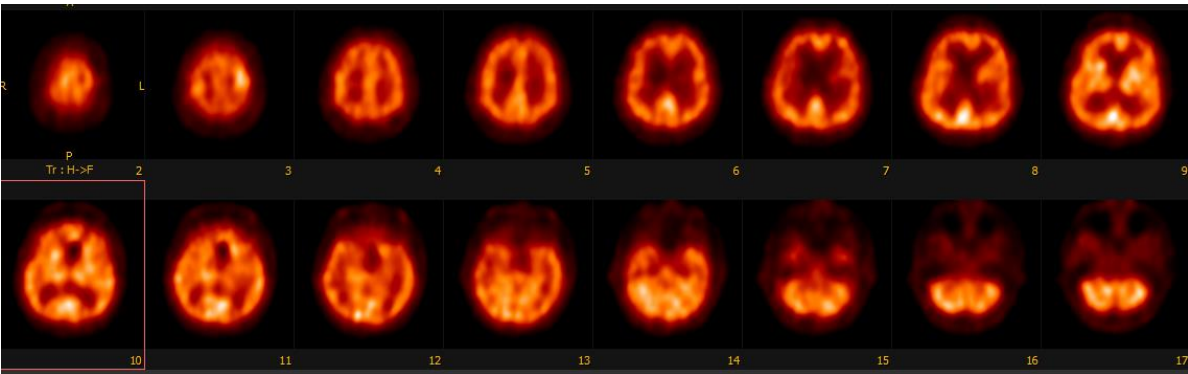




792MBq 99mTc-HMPAO  
LEHR-HS collimator  
120 view, 30 sec/view  
30 minutes

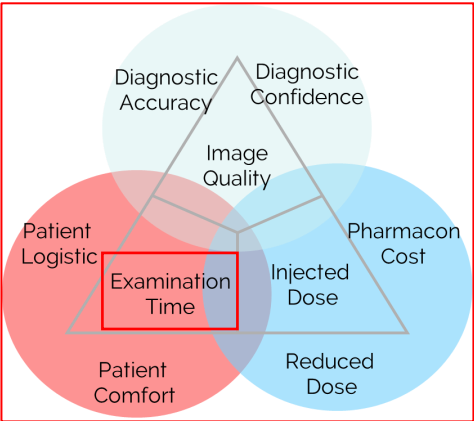


781MBq 99mTc-HMPAO  
Brain Multi-Pinhole collimator  
72 view, 75 sec/view, 4cm Helical displacement  
30 minutes

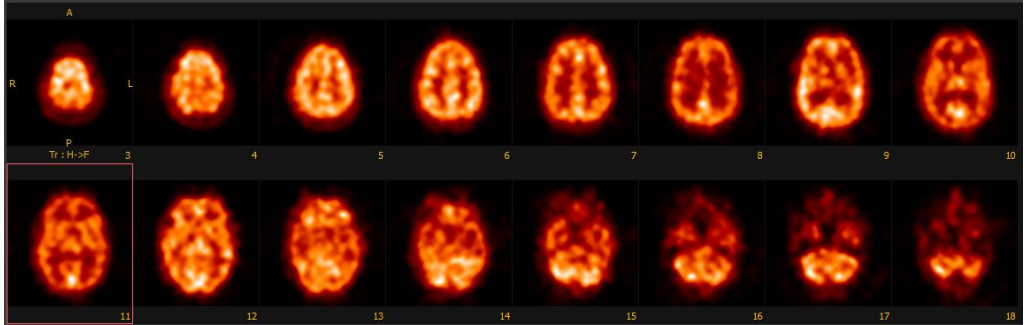
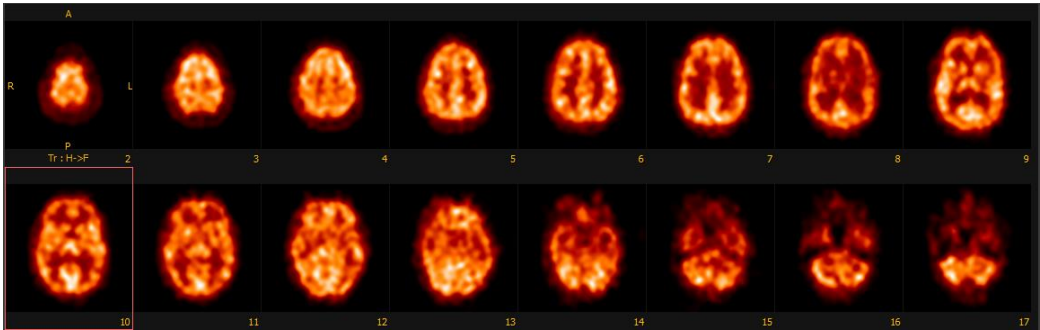




781MBq  $^{99m}\text{Tc}$ -HMPAO  
Brain Multi-Pinhole collimator  
72 view, 37 sec/view, 4cm Helical displacement  
15 minutes

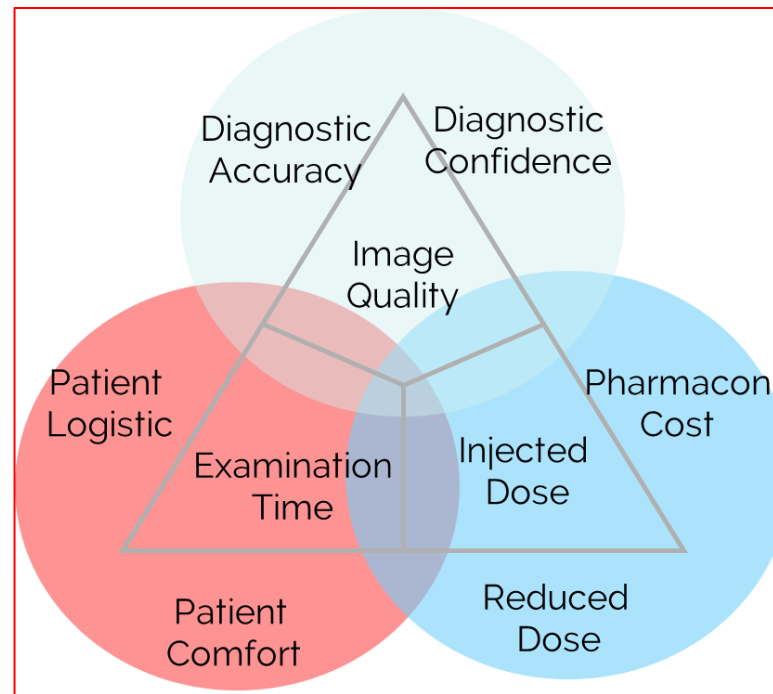
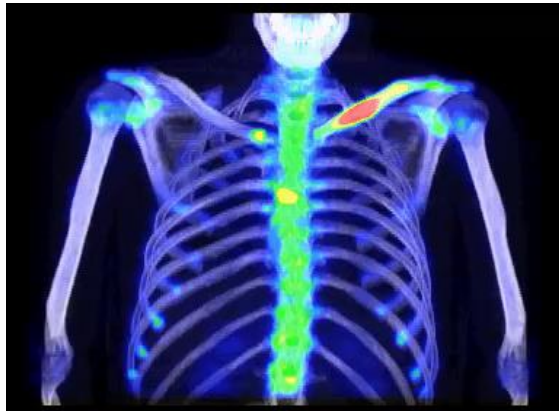


781MBq  $^{99m}\text{Tc}$ -HMPAO  
Brain Multi-Pinhole collimator  
72 view, 25 sec/view, 4cm Helical displacement  
10 minutes



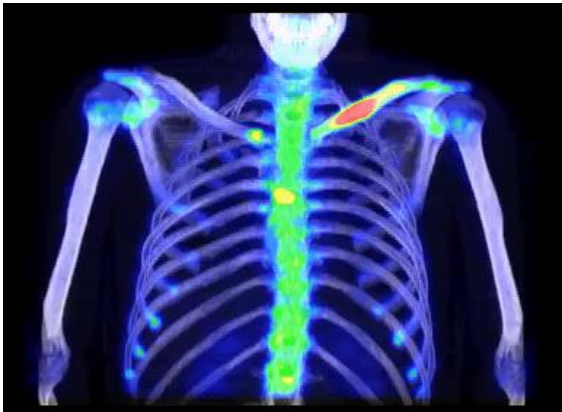


600MBq  $^{99m}\text{Tc}$ -MDP  
LEHR-HS collimator  
120 view, 12 sec/view  
12 minutes/FOV

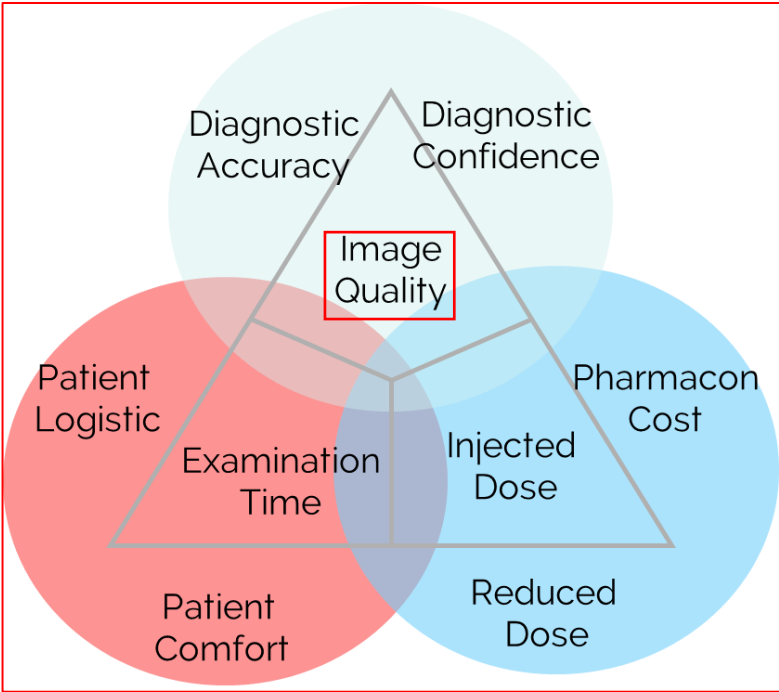




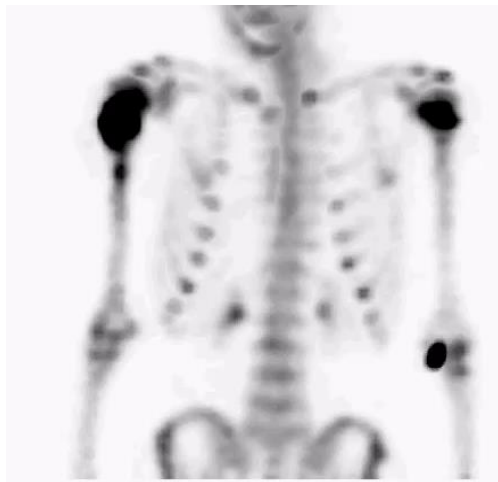
600MBq  $^{99m}\text{Tc}$ -MDP  
LEHR-HS collimator  
120 view, 12 sec/view  
12 minutes/FOV



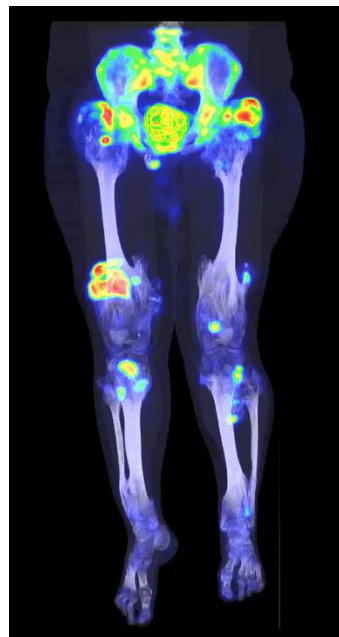
592MBq  $^{99m}\text{Tc}$ -MDP  
LEHR-HS collimator  
120 view, 12 sec/view  
8 minutes/FOV



# Bone Scintigraphy Injected dose optimisation



212MBq, 9y old

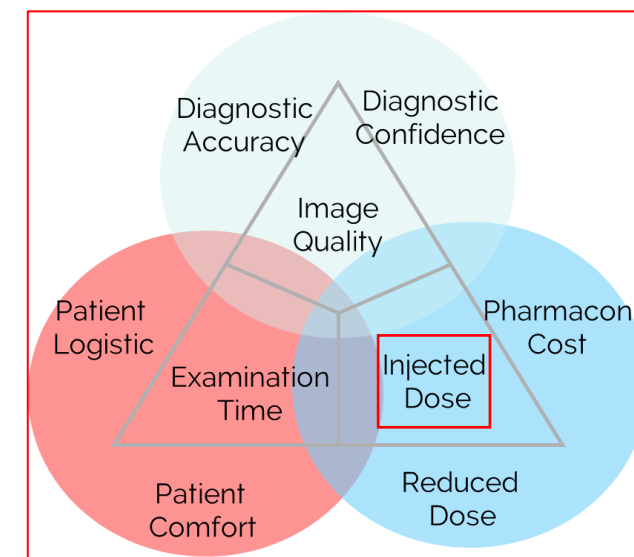


404MBq, 17y old



410MBq, 16y old

$^{99m}\text{Tc}$ -MDP  
LEHR-HS collimator  
120 view, 12 sec/view  
8 minutes/FOV



# Bone Scintigraphy scan time optimisation



585MBq  $^{99m}\text{Tc}$ -MDP  
LEHR-HS collimator  
120 view, 12 sec/view



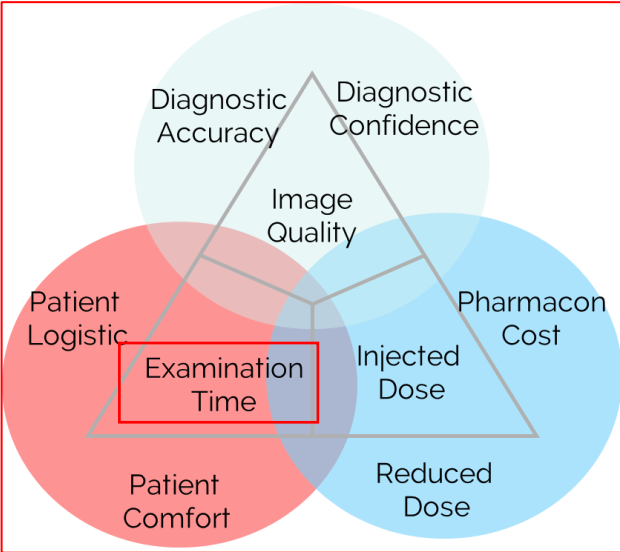
4min/FOV



3min/FOV



2min/FOV



# Bone Scintigraphy scan time optimisation



585MBq  $^{99m}\text{Tc}$ -MDP  
LEHR-HS collimator  
120 view, 12 sec/view



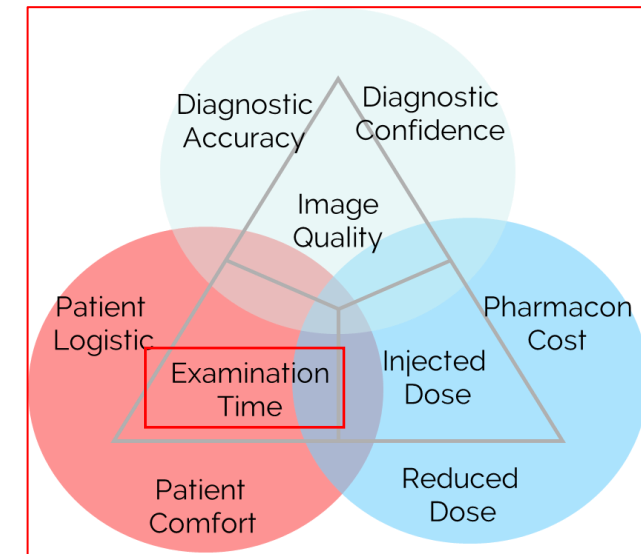
4min/FOV



3min/FOV



2min/FOV



# Myocardial perfusion images

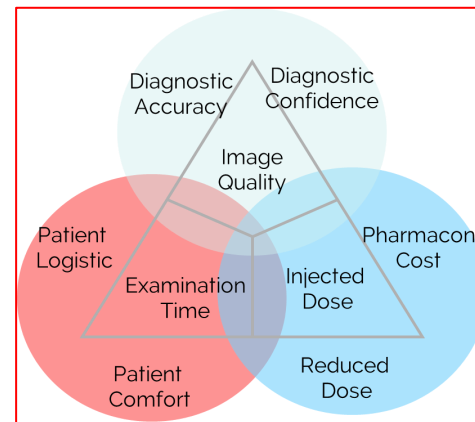
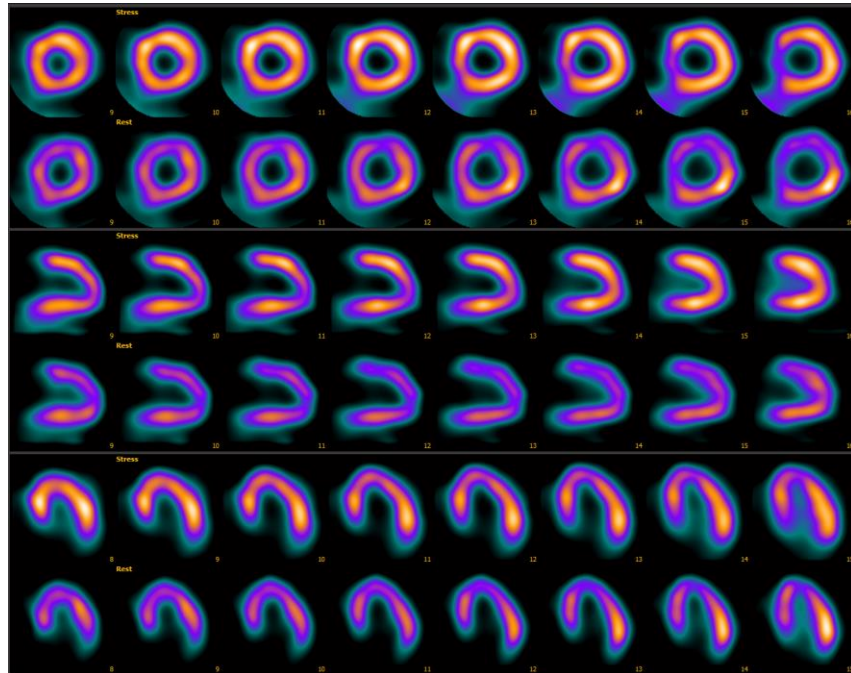


410MBq 99mTc-SestaMIBI

LEHRHS collimator

120 view, 8sec/view

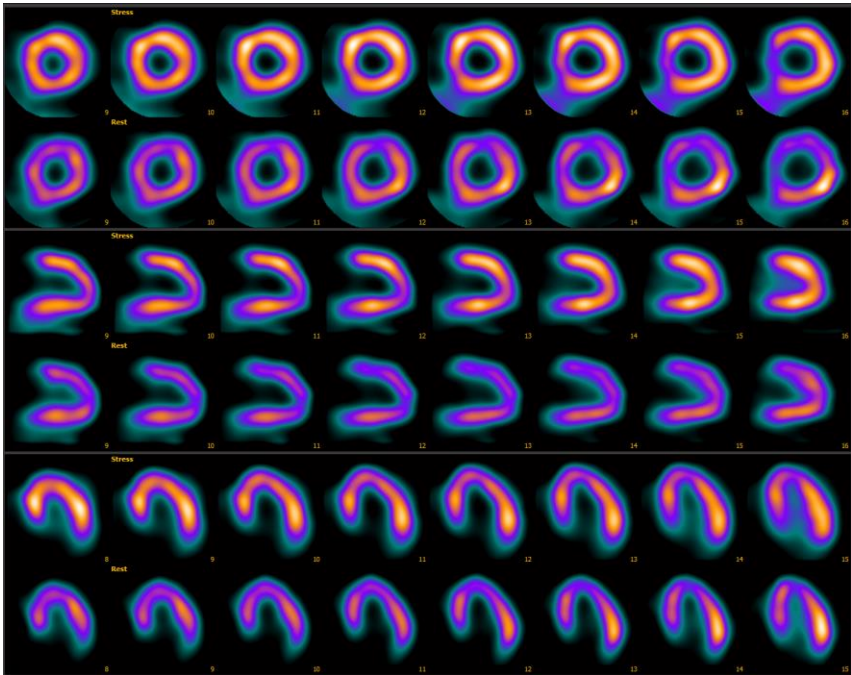
8 min



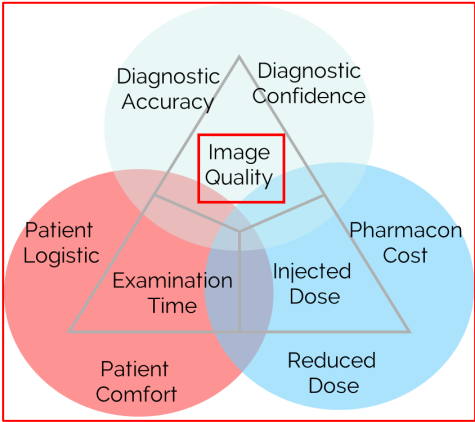
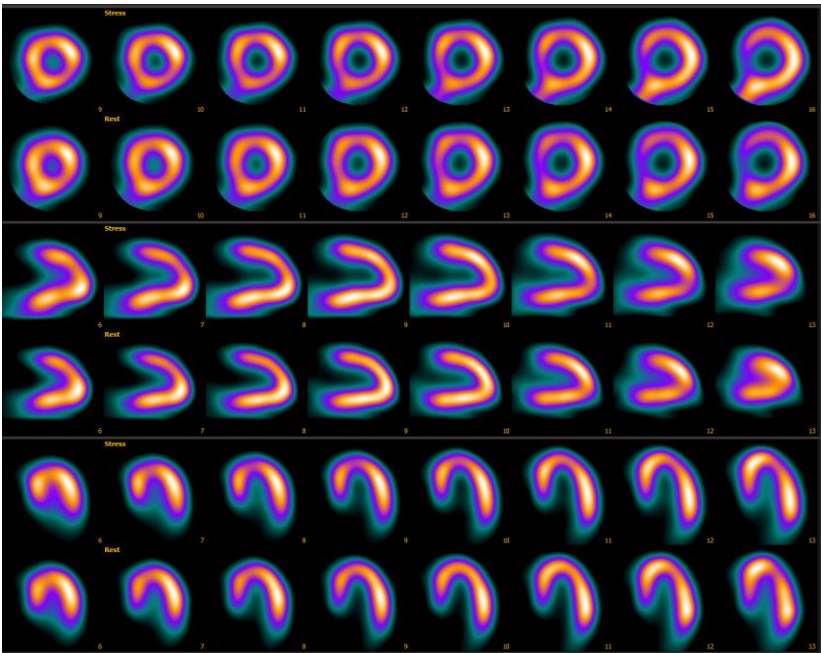
# Myocardial perfusion images



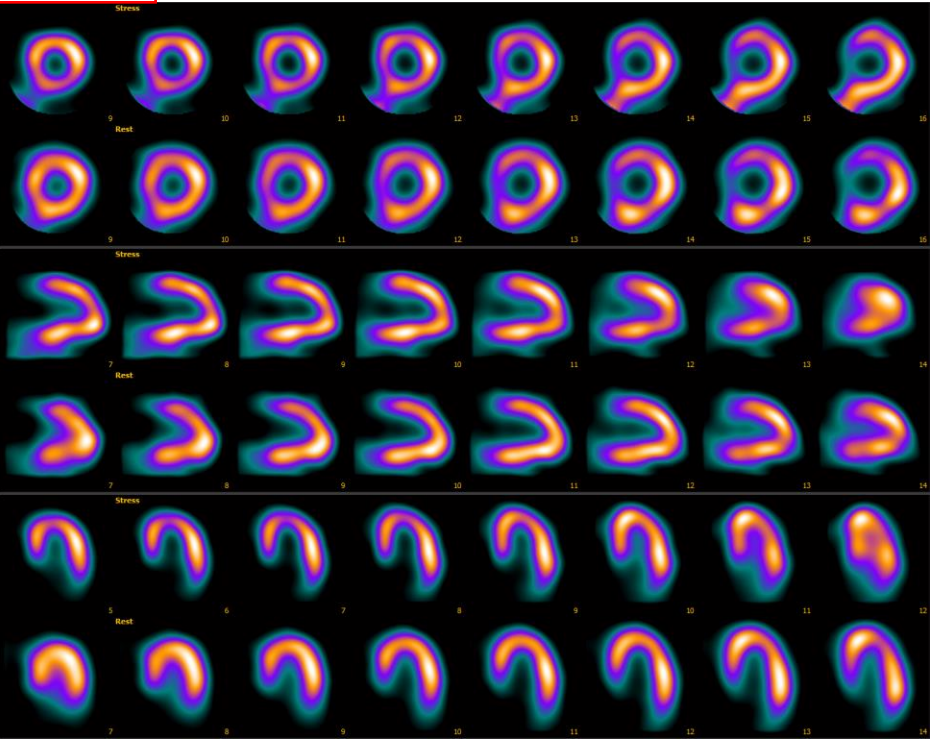
410MBq 99mTc-SestaMIBI  
LEHRHS collimator  
120 view, 8sev/view  
8 min



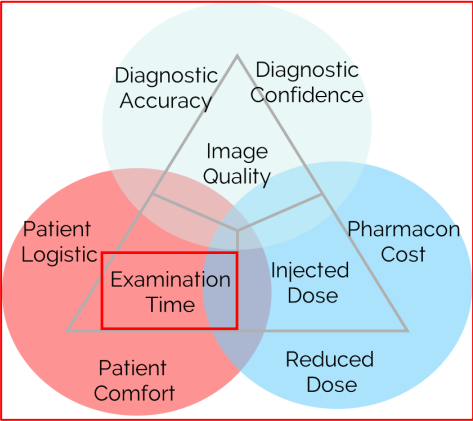
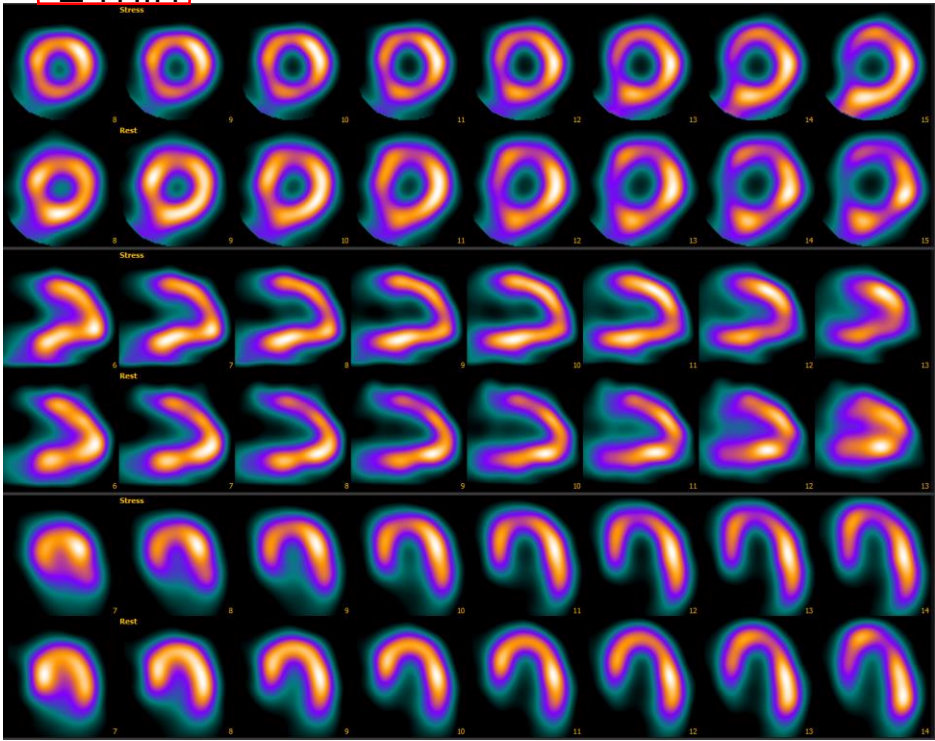
410MBq 99mTc-SestaMIBI  
MultiPinHole collimator  
72 view, 20sev/view, 40mm helical displacement  
8 min



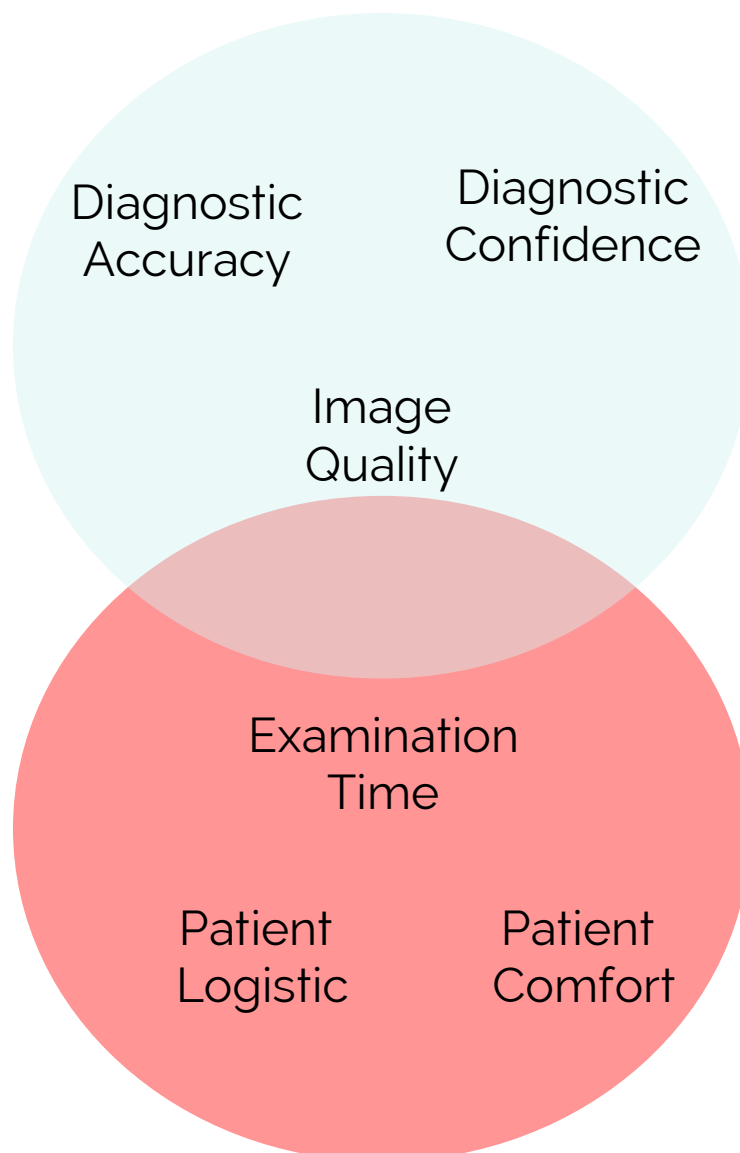
410MBq 99mTc-SestaMIBI  
MultiPinHole collimator  
72 view, 10sev/view, 40mm helical displacement  
4 min



410MBq 99mTc-SestaMIBI  
MultiPinHole collimator  
72 view, 5sev/view, 40mm helical displacement  
2 min



# AHASA at radioisotope therapy



As High As Safely Administrable

# $^{177}\text{Lu}$ -LUTATHERA



Diagnostic Accuracy

Diagnostic Confidence

Image Quality

Examination Time

Patient Logistic

Patient Comfort



7400MBq  $^{177}\text{Lu}$ - LUTATHERA M-LEGP collimator

120 view, 8 sec/view

12 minutes/FOV

7400MBq  $^{177}\text{Lu}$ - LUTATHERA M-LEGP collimator

120 view, 8 sec/view

8 minutes/FOV

50 Million counts

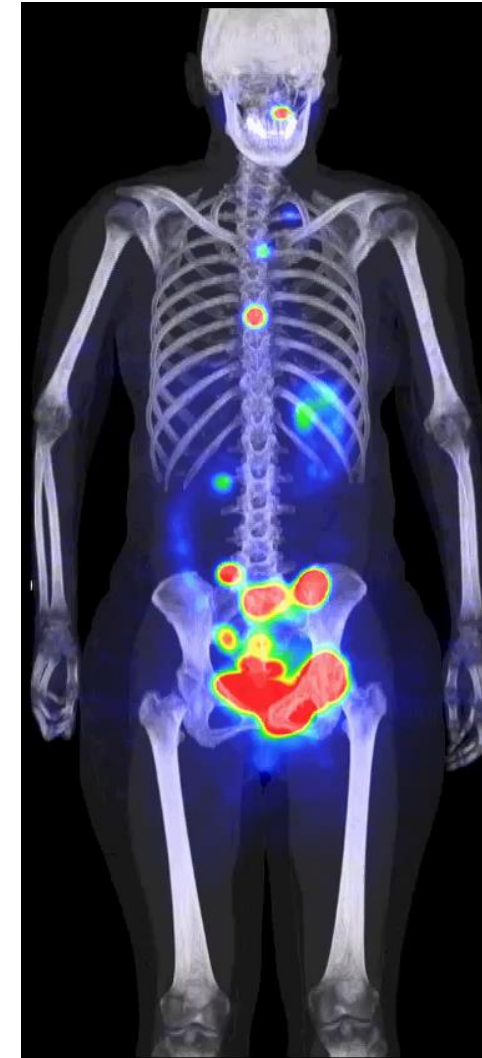
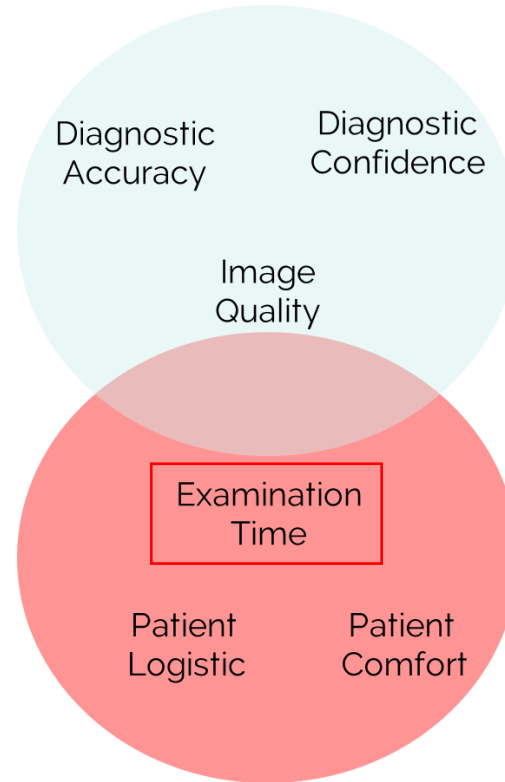
2 minutes/FOV

15 Million Counts

# $^{131}\text{I}$ -NaI scan



3700 MBq  $^{131}\text{I}$  NaI  
M-HEGP collimator  
120 view, 15 sec/view  
20 minutes/FOV



3700 MBq  $^{131}\text{I}$  NaI  
M-HEGP collimator  
120 view, 15 sec/view  
**10 minutes/FOV**

# Conclusion

| Acquisition name                      | Scan time              | Injected activity  | Radiopharmaceutical                               |
|---------------------------------------|------------------------|--------------------|---------------------------------------------------|
| Datscan                               | 30 min<br>10 min       | 60 MBq<br>185 MBq  | <sup>123</sup> I Ioflupane                        |
| Lung Perfusion                        | 4 min<br>8 min         | 180 MBq<br>120 MBq | <sup>99m</sup> Tc-MAA                             |
| Somatostatin receptor<br>scintigraphy | 4 min/FOV<br>8 min/FOV | 300 MBq<br>150 MBq | <sup>99m</sup> Tc-HYNIC-D-Phe1<br>Tyr3-Octreotide |
| LUTATHERA                             | 2 min/FOV              | 7400 MBq           | <sup>177</sup> Lu-LUTATHERA                       |
| Bone Scan                             | 2 min/FOV<br>8 min/FOV | 550 MBq<br>200 MBq | <sup>99m</sup> Tc-MDP                             |
| Iodine scan                           | 10 min/FOV             | 3700 MBq           | <sup>131</sup> I-NaI                              |
| Myocardial                            | 2-4 min                | 400 MBq            | <sup>99m</sup> Tc-SestaMIBI                       |
| Brain Perfusion                       | 10 min                 | 750 MBq            | <sup>99m</sup> Tc-HMPAO                           |

# Thank you for your attention!

Do you have any questions?

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[www.mediso.com](http://www.mediso.com)



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