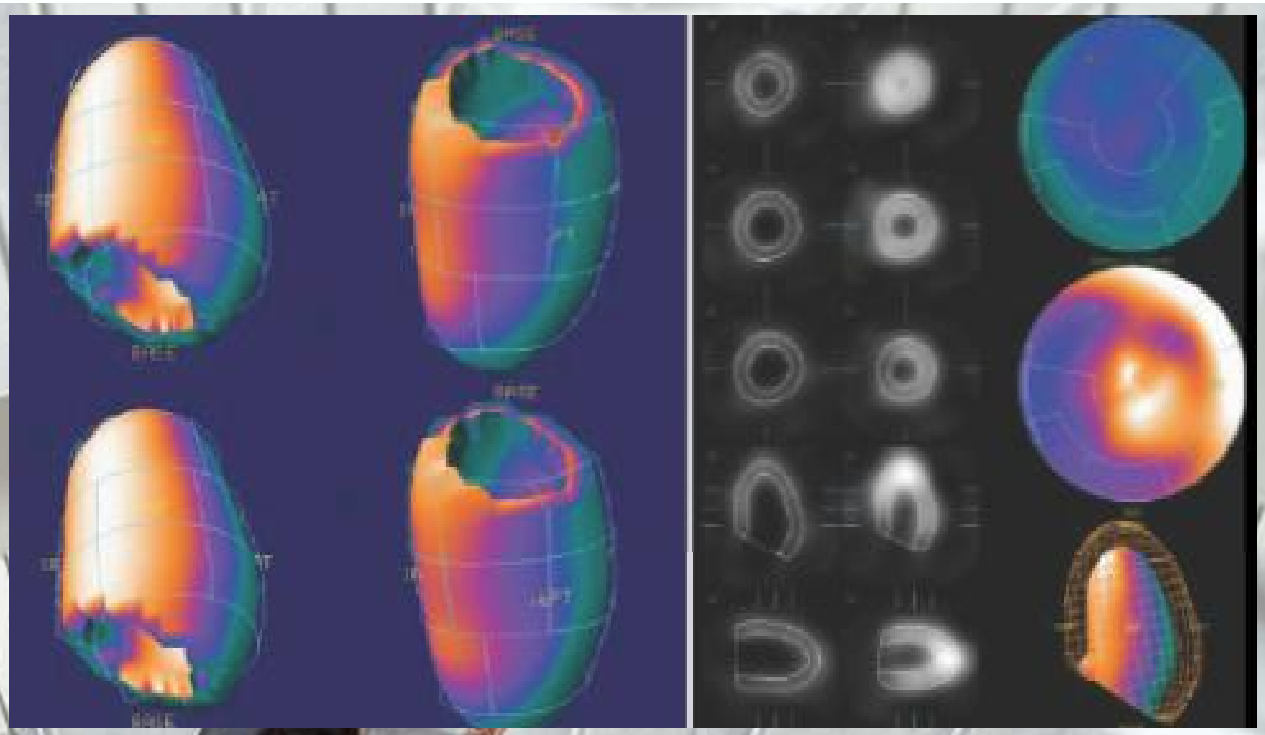
Cardiac Training



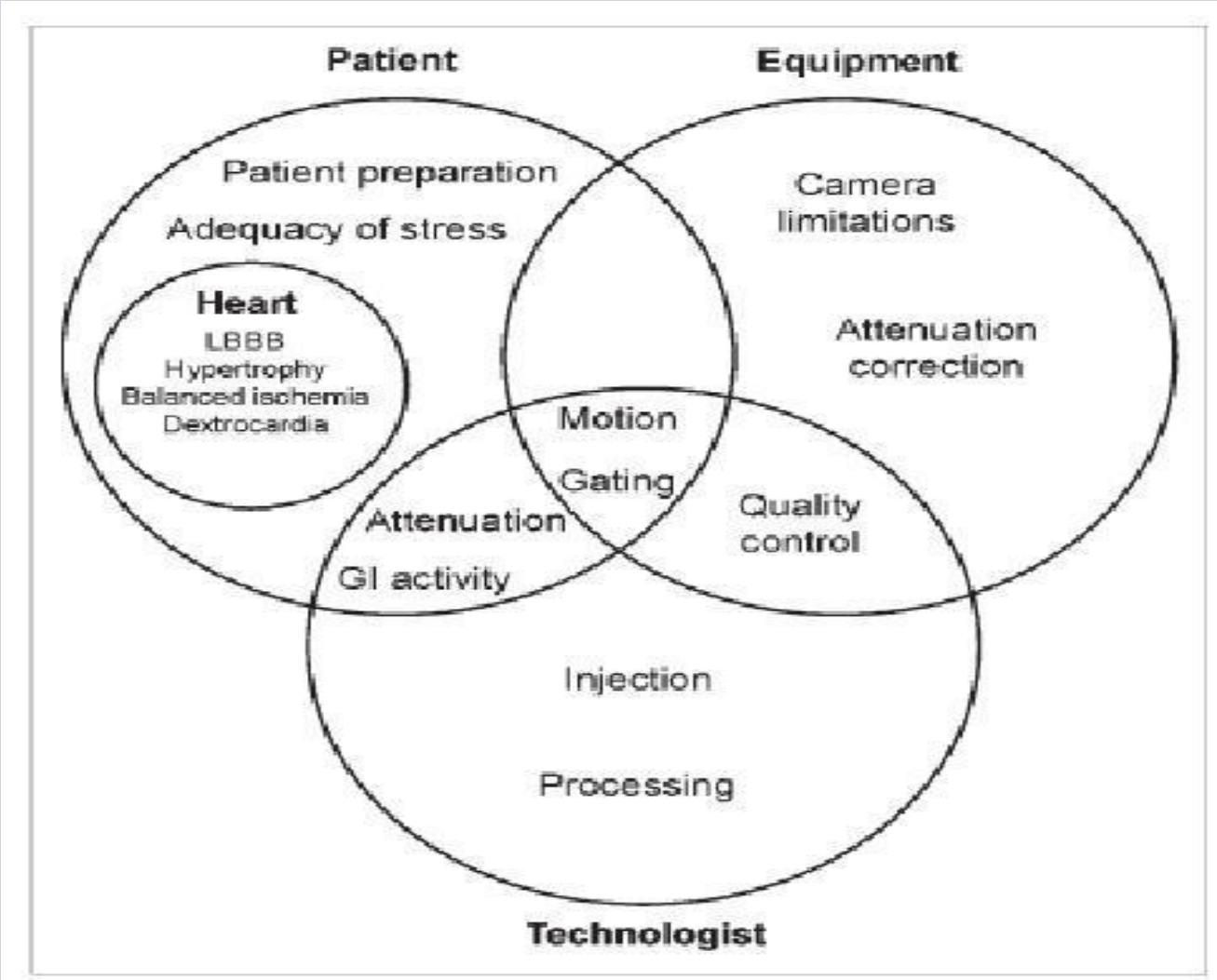
Jane Yang

MI Application Specialist

Summary

- Tips for Cardiac Training
- Quantification Analysis

Important checks



Camera, Radiopharmaceutical, Patient

- **Good new 90°MHR!!**
- **Well preparation of the radiopharmaceutical**
- **Proper center and positioning of the patient**
- **ECG must be checked properly before starting the scan. R Waves must be positiv !!! Check polarity for correctness on the PPM. Electrodes must be set correct please refer to the manuals.**
- **Make sure that the beats are centered and remain proper and correct inside the beat window for duration of the study.**

Cardiac Creep

- **Verification:** Journal of Nuclear Medicine Technology 2006; 34:215-219

- **Cardiac creep is characterized by a gradual upward shift of the heart due to increased diaphragmatic excursion.**

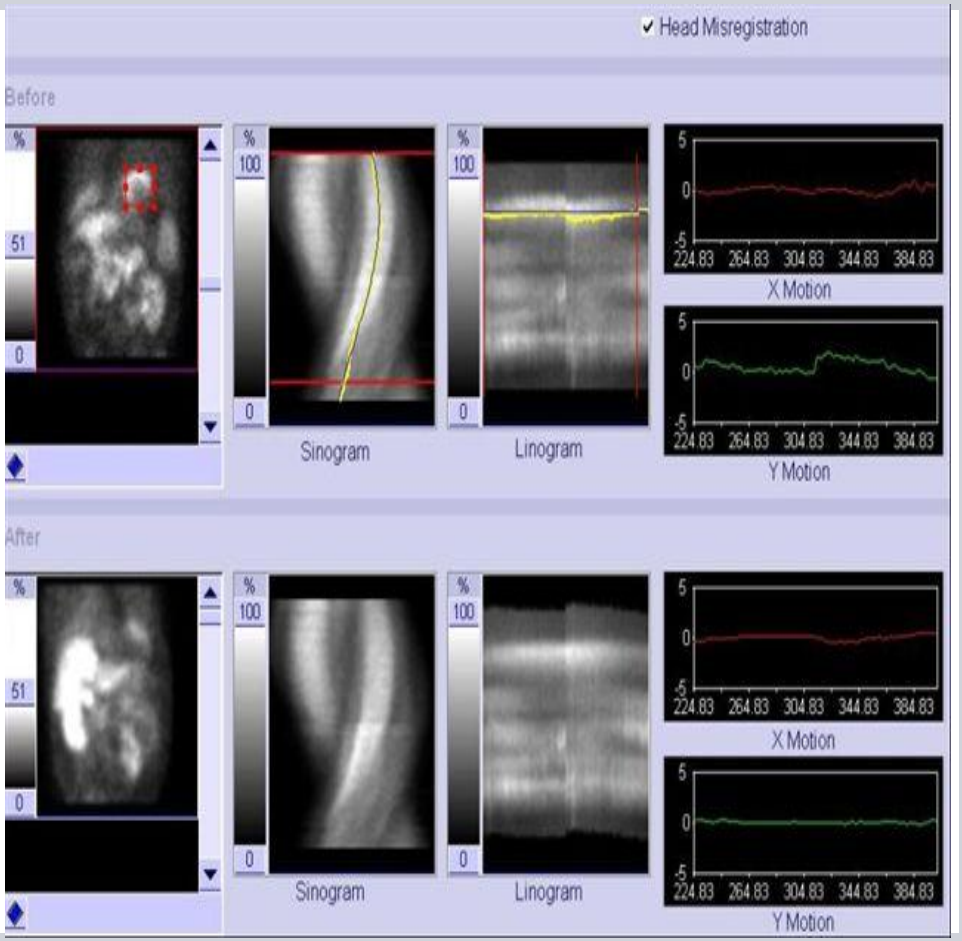
  Solution:

- **A vertical change in position of the heart is usually noticed between the last frame of the first detector and the first frame of the second detector.**

- **Although these 2 datasets are theoretically accepted as consecutive images, there is actually an interval between them during which repositioning of the heart occurs. This phenomenon is characterized as "cardiac creep". It can be avoided most of the time by allowing the patient to rest on the camera bed (or chair) for approximately 3 to 5 minutes prior to imaging.**

Check for Cardiac Creep

- This is observed on the linogram
- Enable Head Misregistration during Motion Correction.
- This will allow each detector to be corrected separately which can compensate for the motion during the scan.



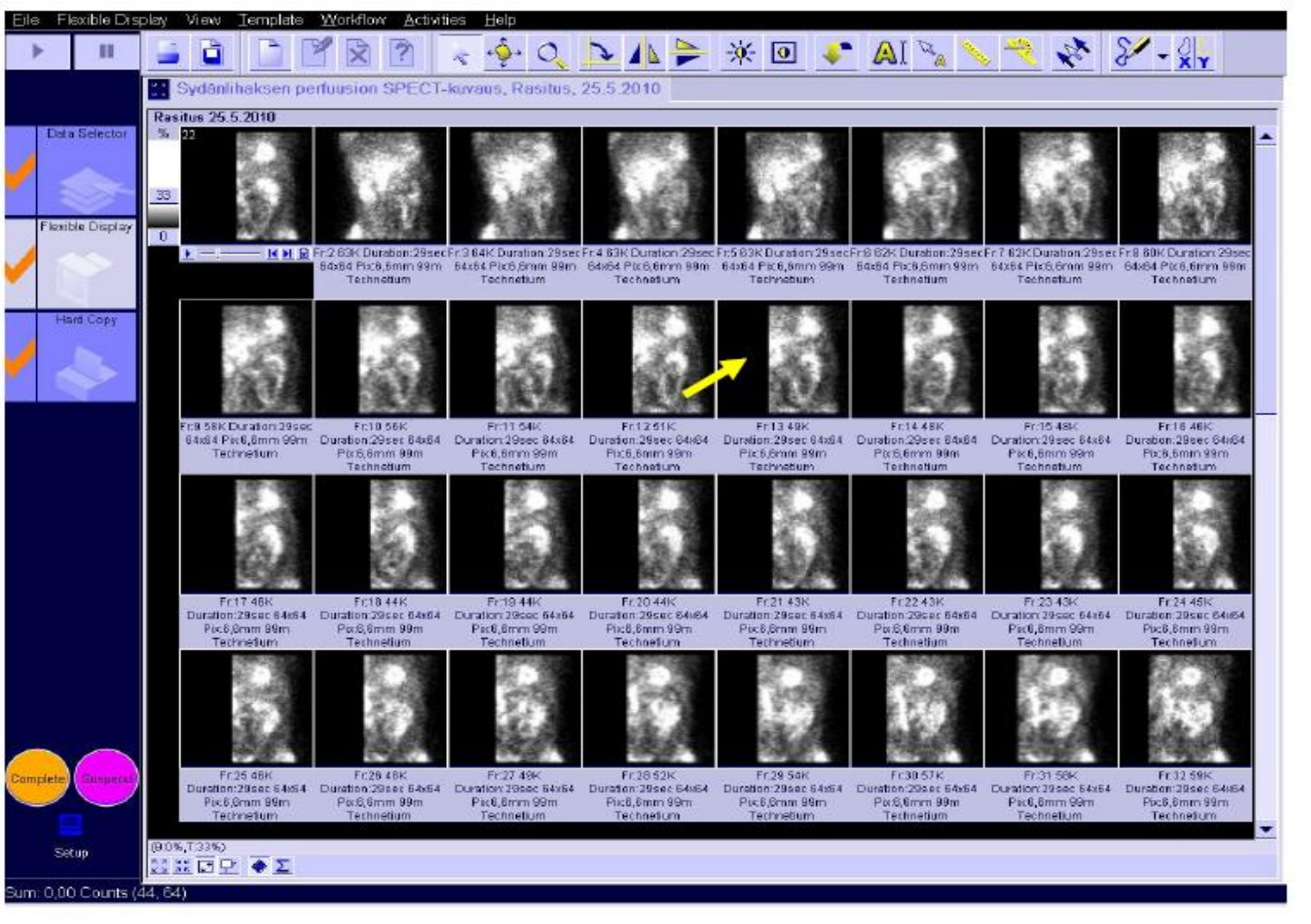
Avoid Truncation Artefacts!!!

The detectors run definitely out of the field of interest.

>typical cause is something obstructing a light rail such as a sheet or piece of clothing that is hanging over the

>The one detector runs out slowly due to the Autocontour.

Avoid a cut of the Apex

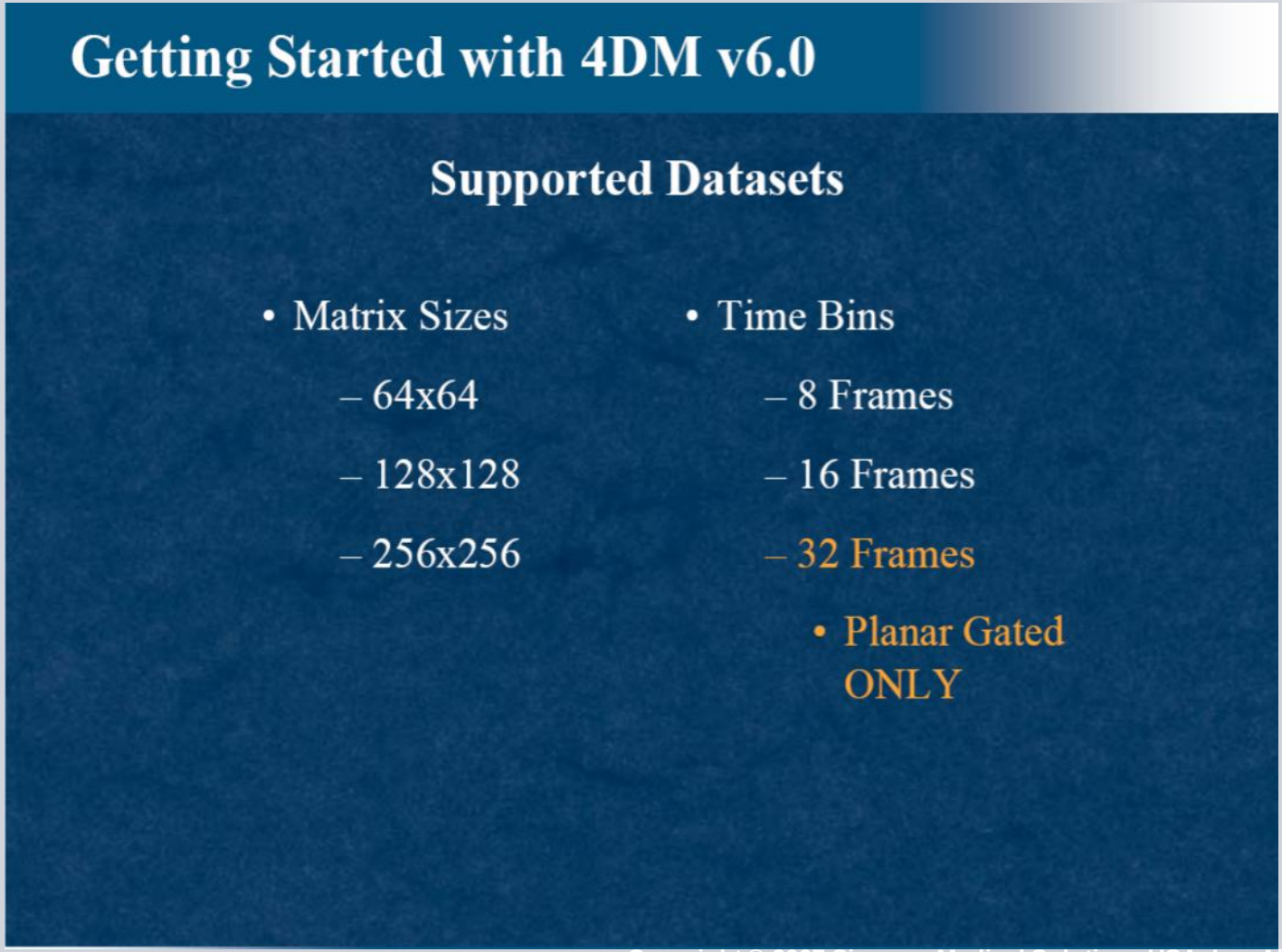


Summary

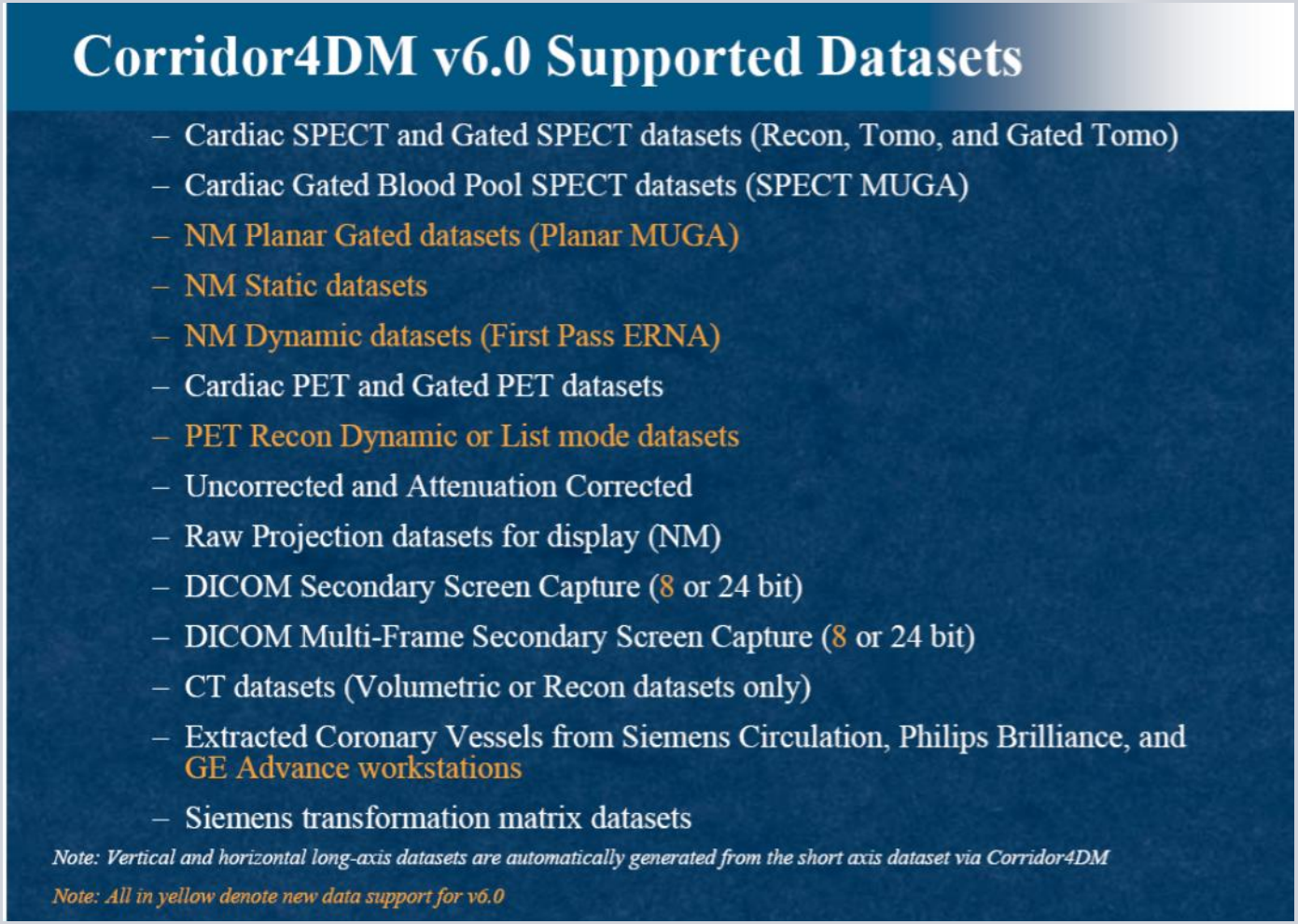
- Tips for Cardiac Training
- Quantification Analysis

Corridor 4DM Getting Started

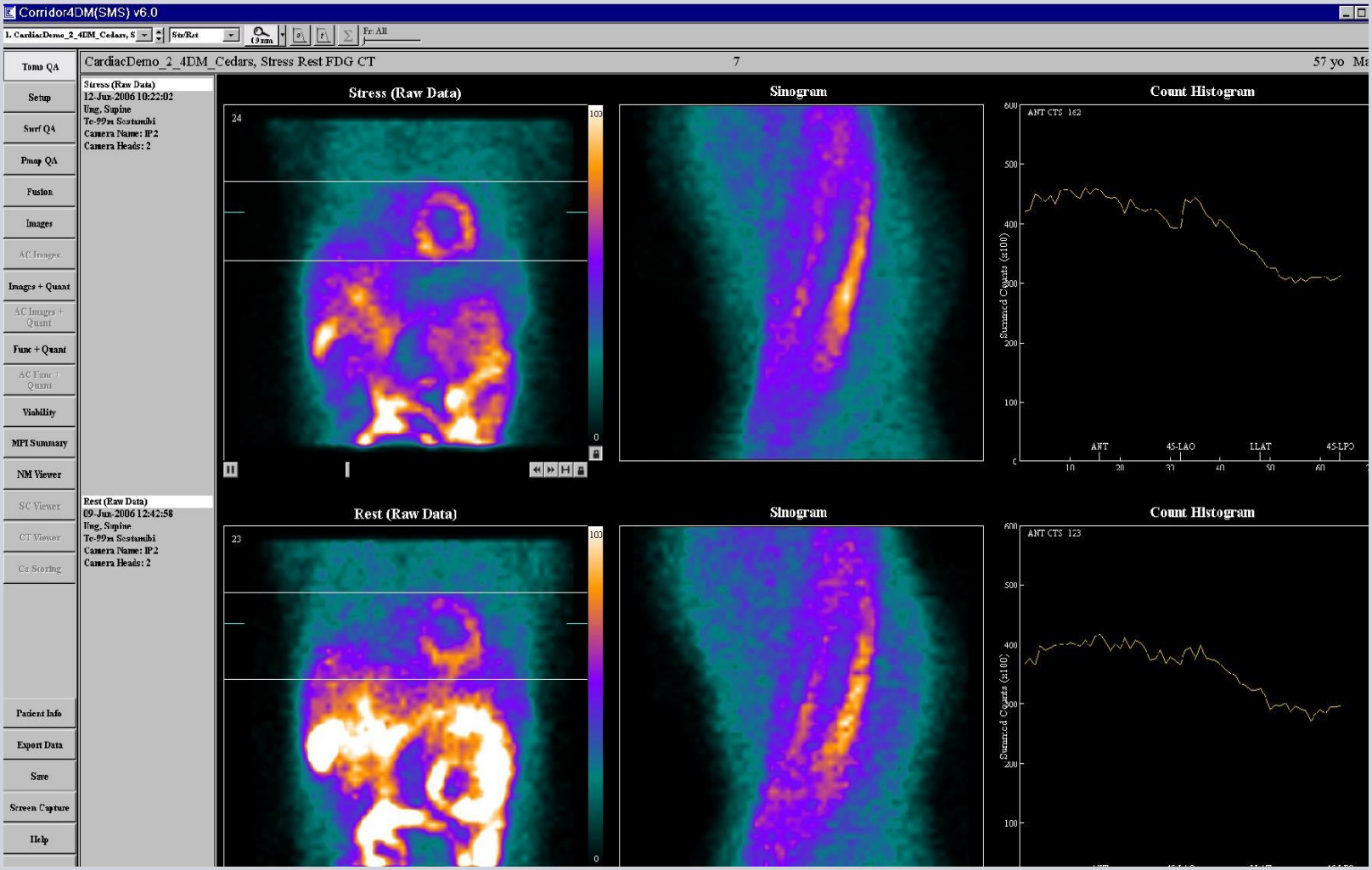
Supported Databases



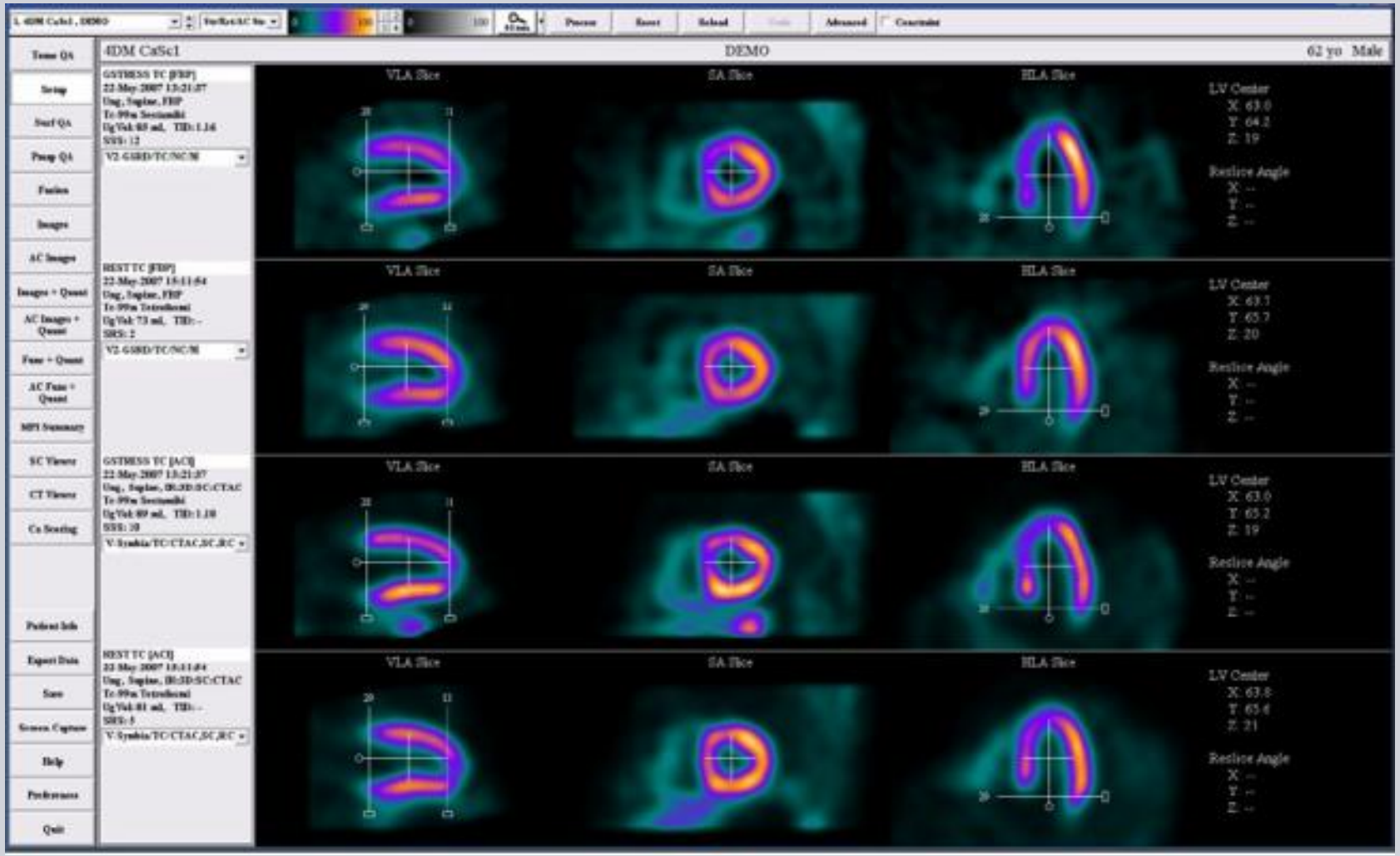
Supported Databases



Tomo QA Page



Set up Page



Set up limitation

❶	Proper positioning of the LV center aligns the crosshairs in the center of the ventricle.
❷	Proper positioning of the apical and basal limits are at the center of the apical myocardium and the mitral valve plane.

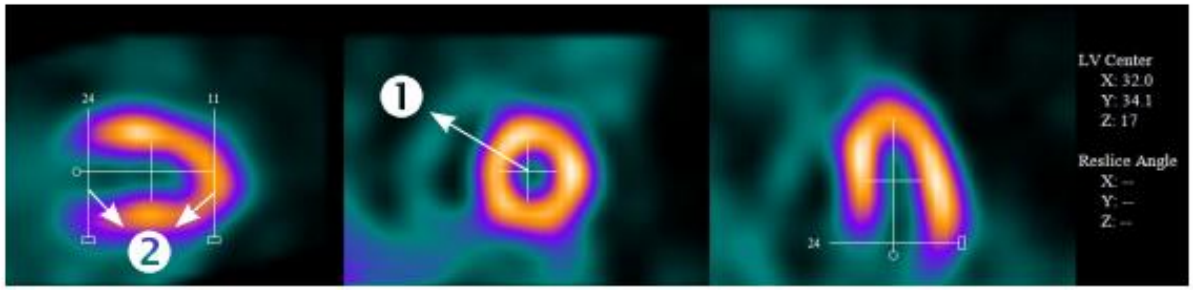


Figure 4.6: *Examples of proper positioning on the Setup screen*

Surf QA Page

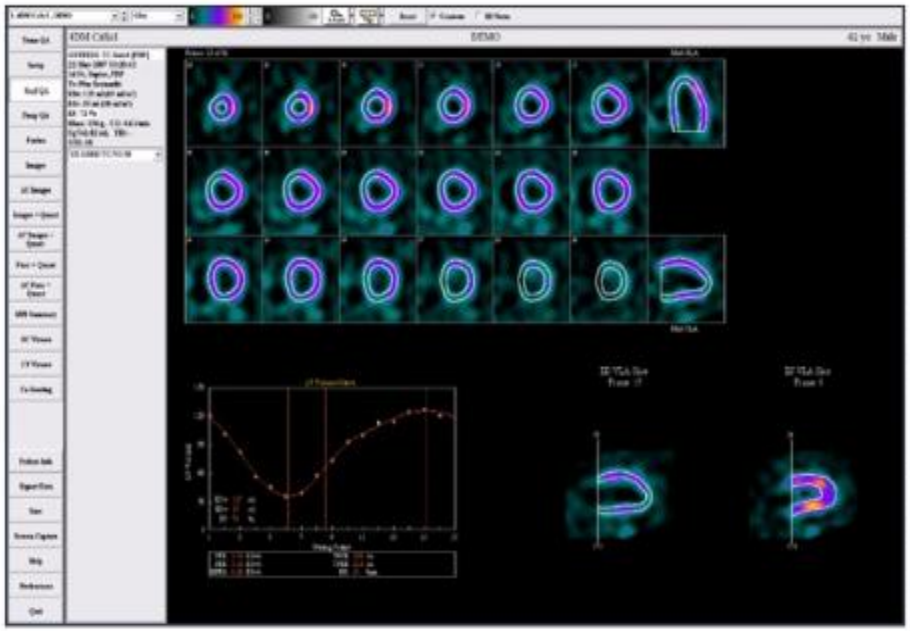


Figure 4.8: *The Surf QA screen with Contours applied to assess the LV surface generation on the gated dataset*

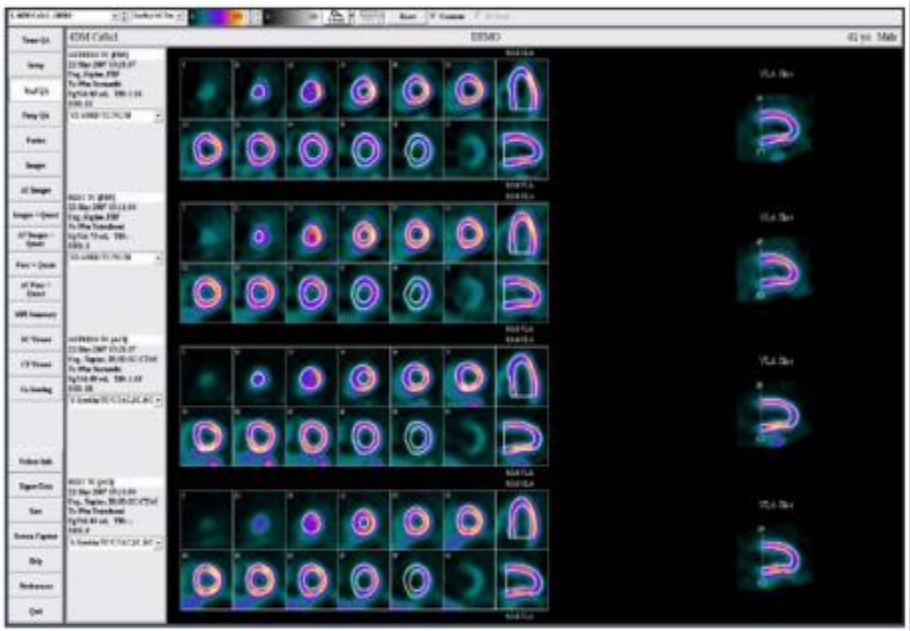
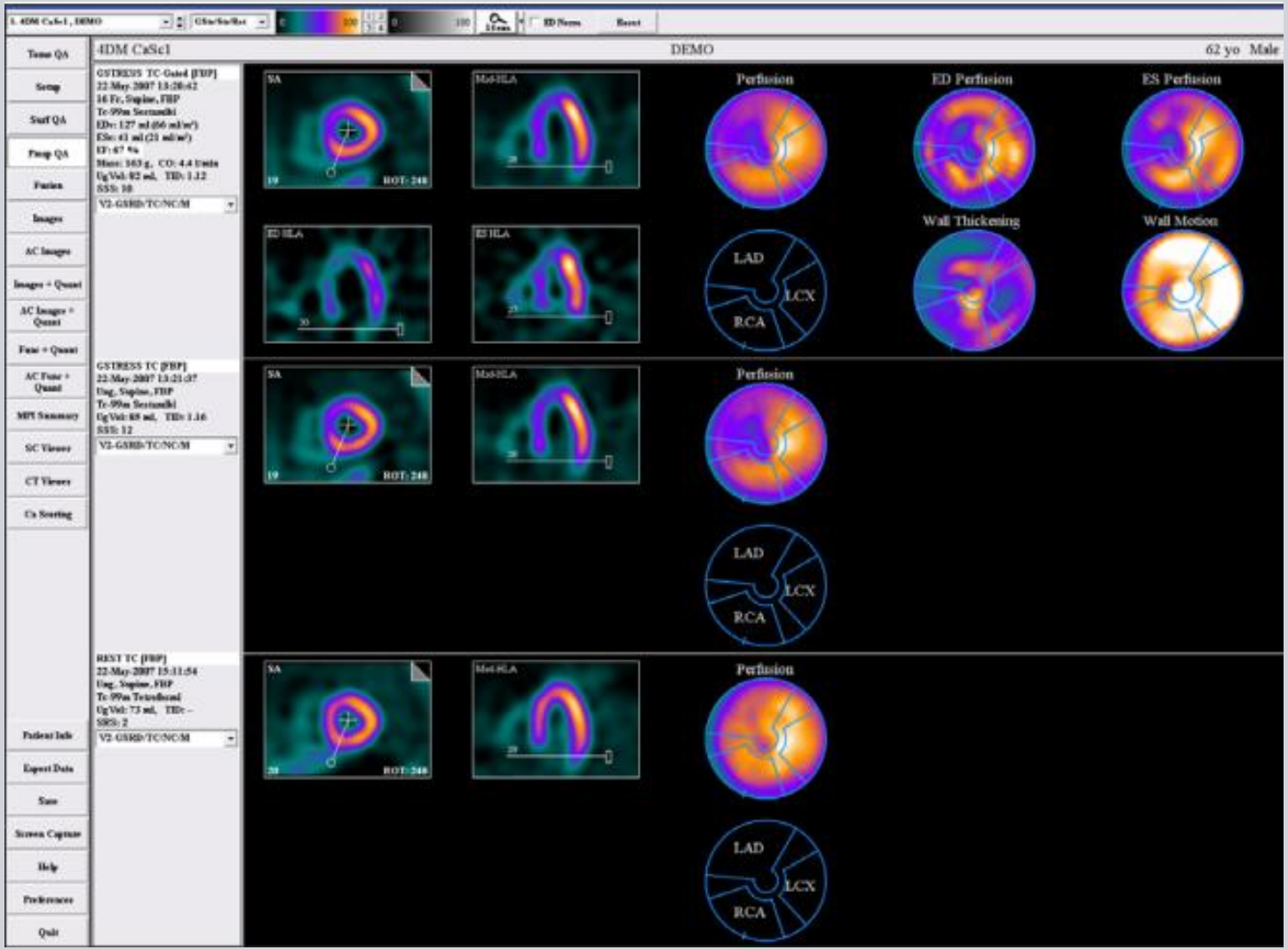
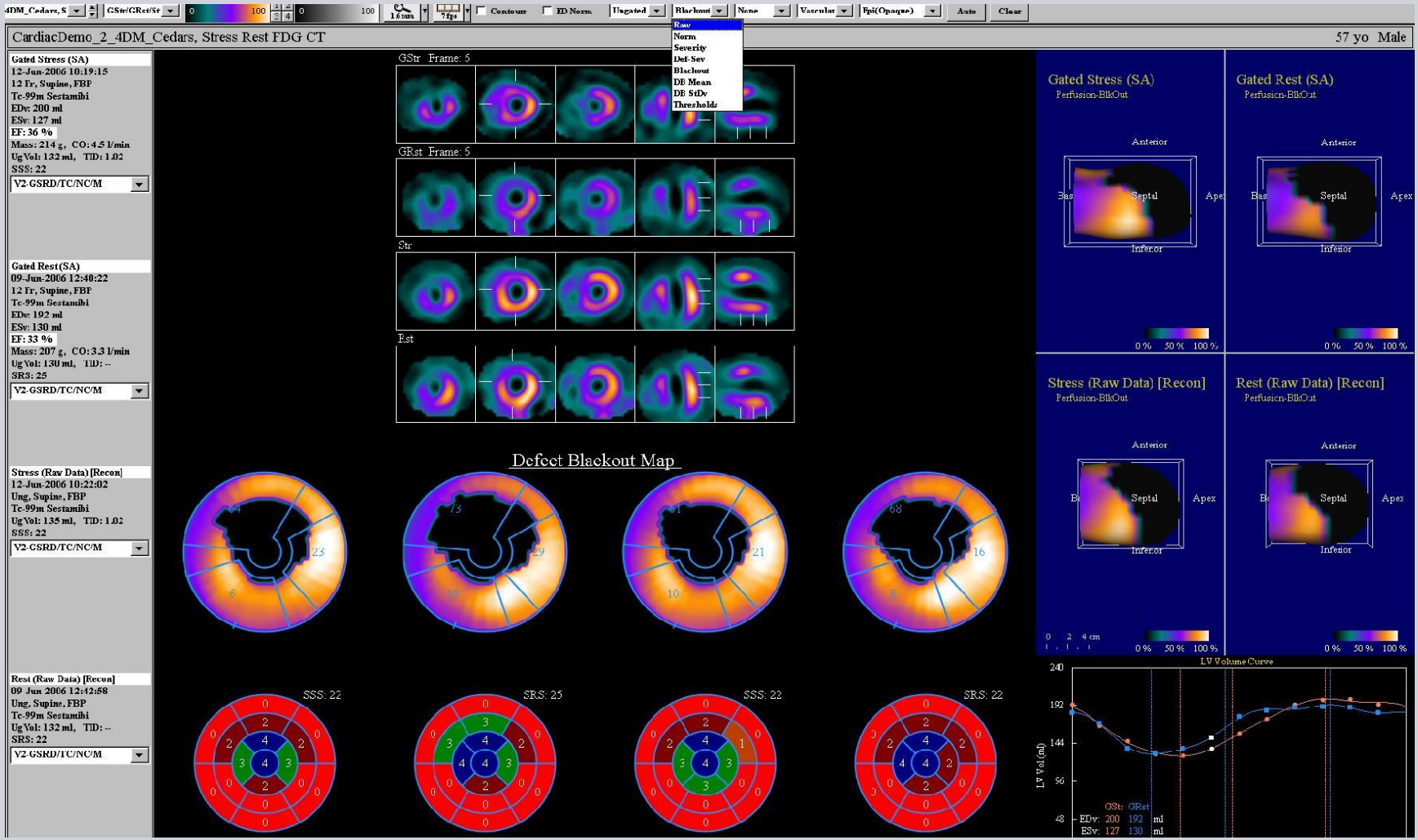


Figure 4.9: *The the Surf QA screen with the Str/Rst/AC Str/AC Rst option selected from the Dataset Selector drop-down menu*

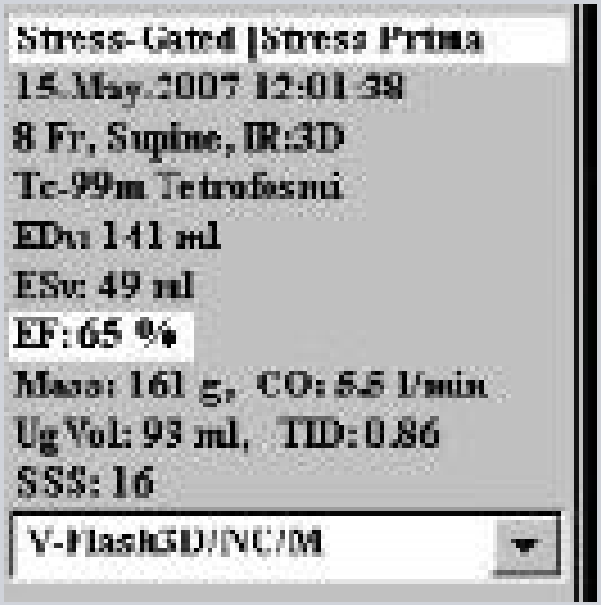
Pmap QA Page



MPI Summary page



P’t information



- TID :Transient Ischemic Dilation
- Cardiac Output

TID Normal Range

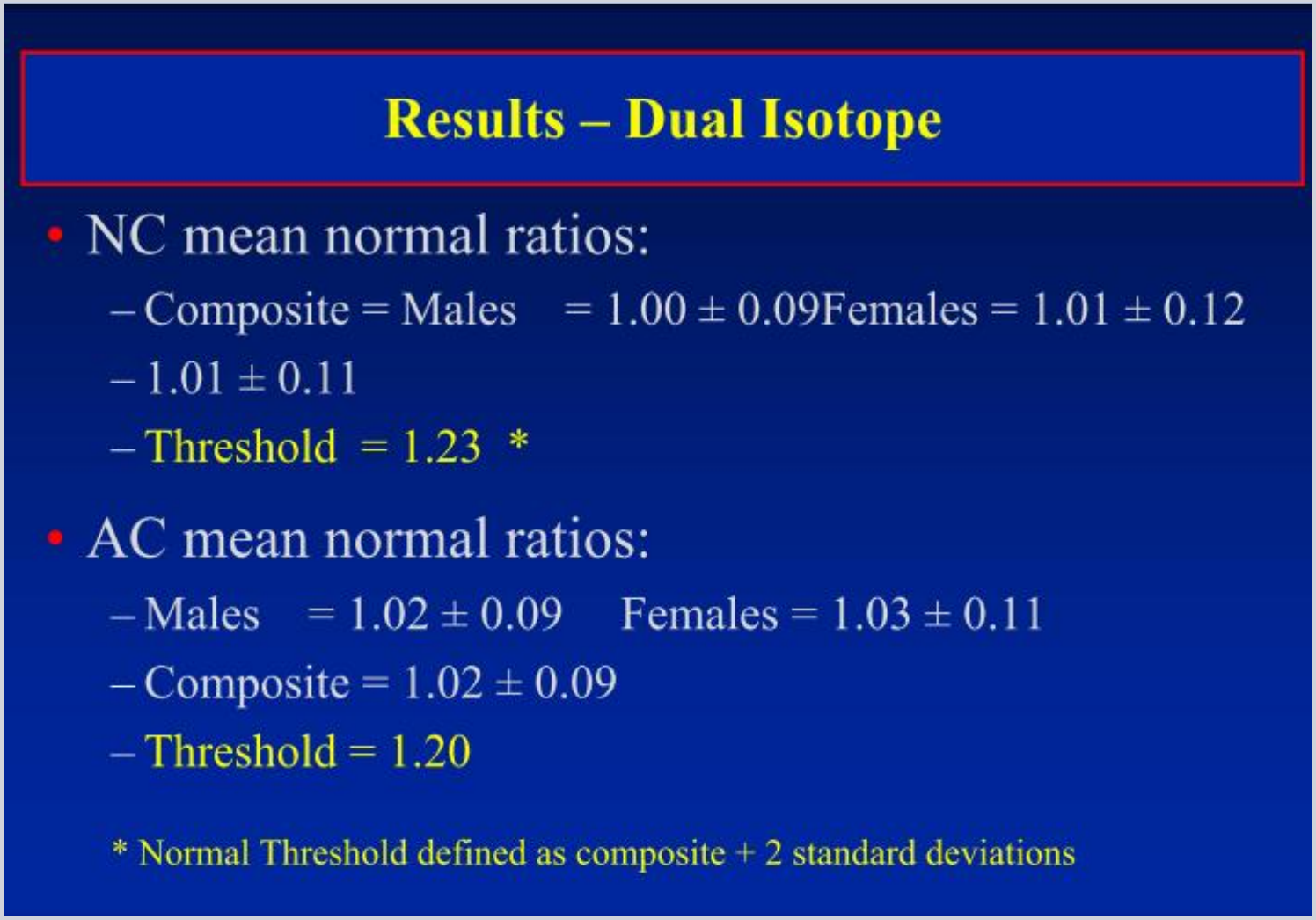
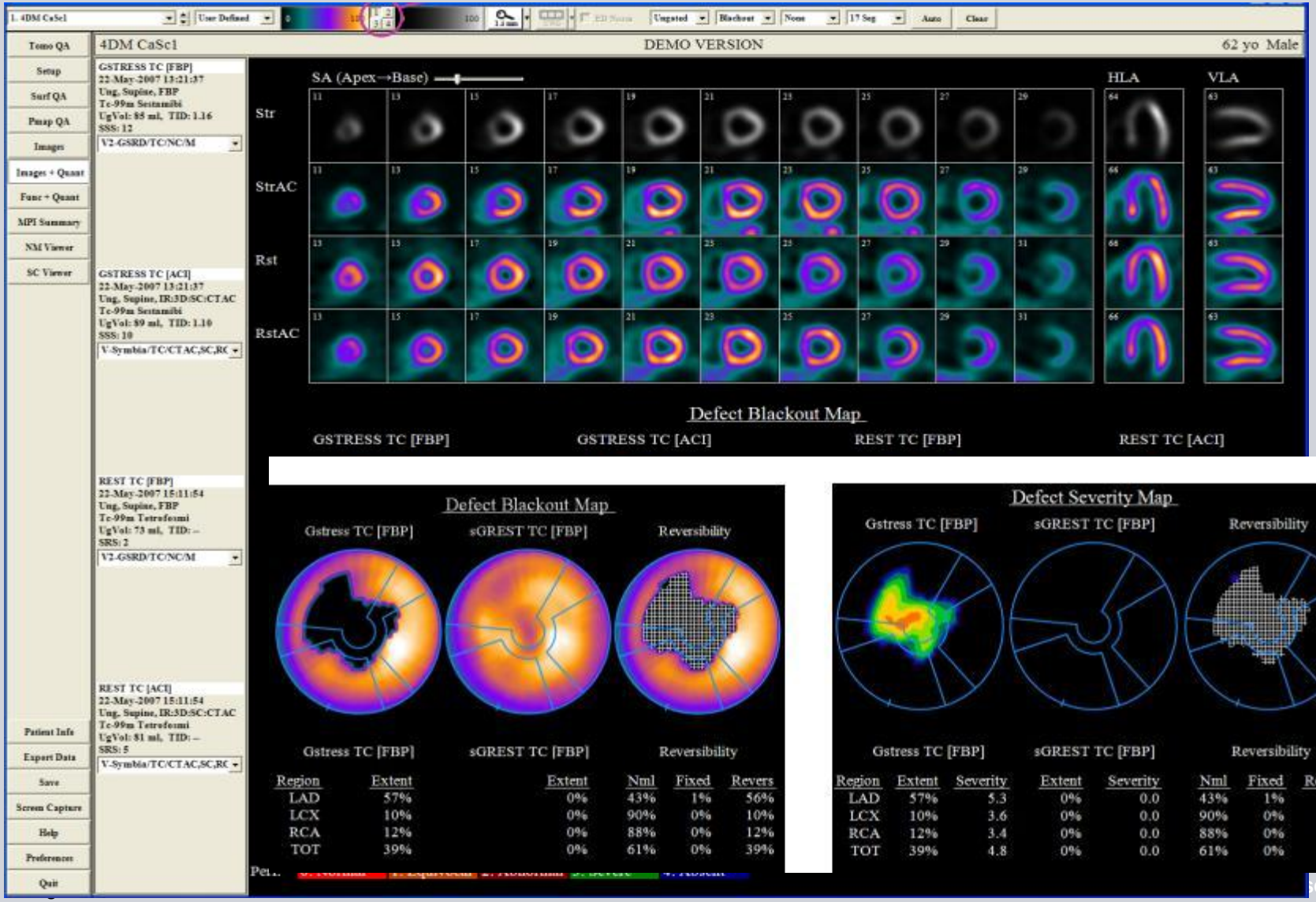
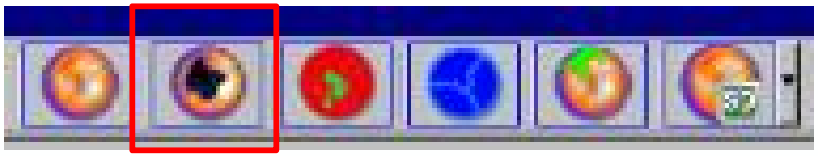


Image + Quant Page

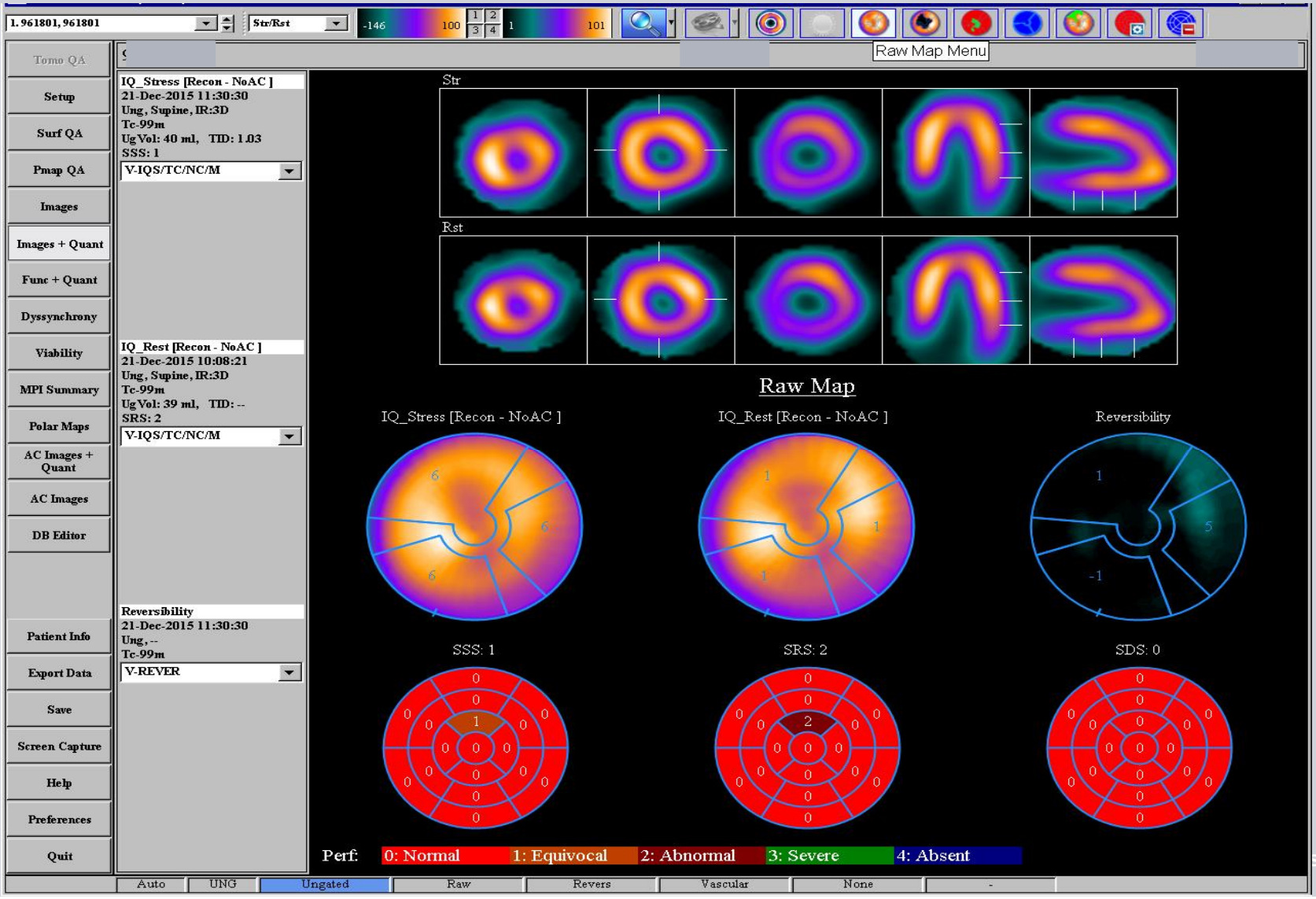


Quant Map menu

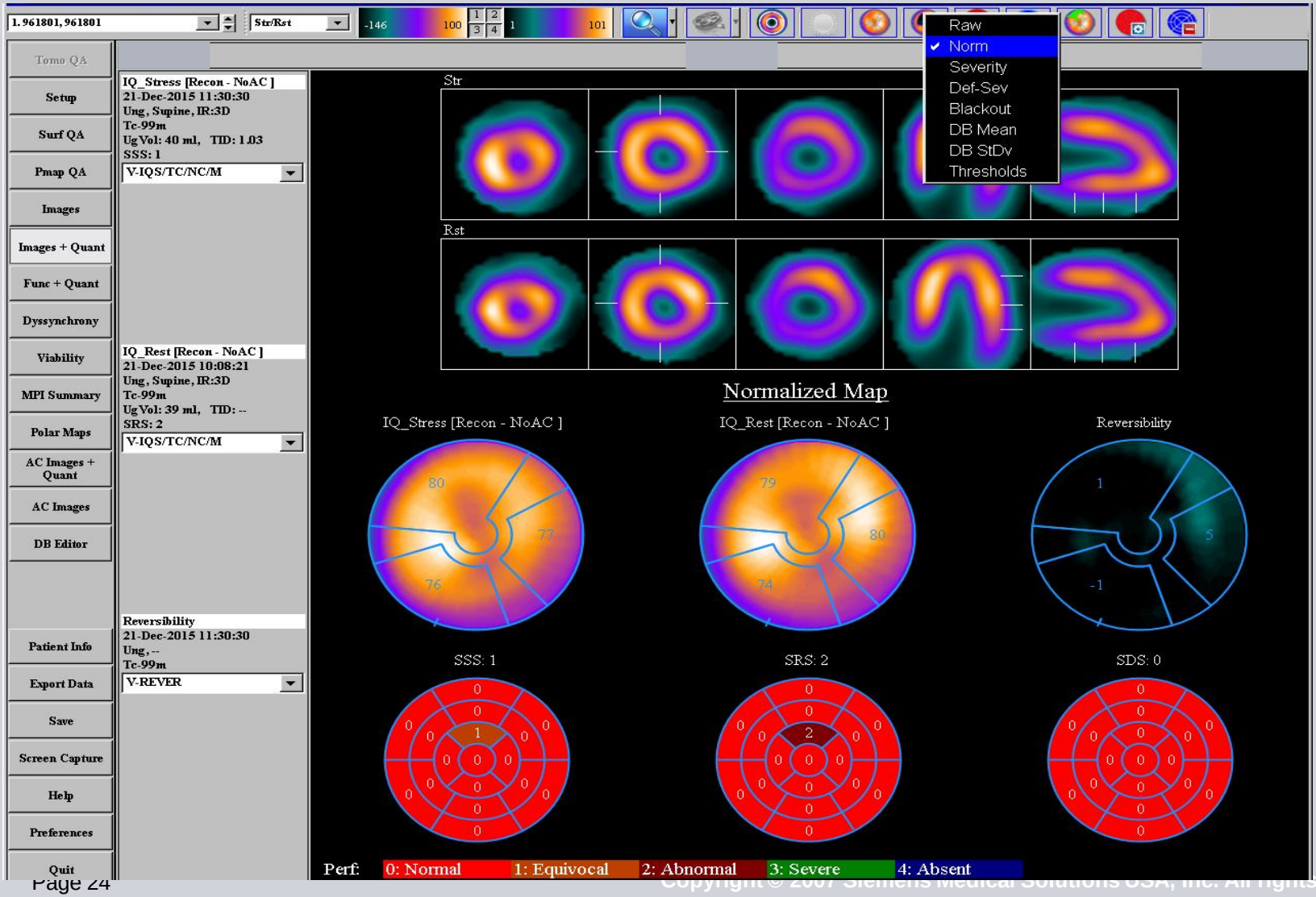


- **Quant Map:** This drop-down menu controls the information displayed in the Quantification (Quant) panel. The available options are:
  - **Raw**: Displays the values reconstructed from image voxel values.
  - **Norm**: For Perfusion maps, displays values normalized such that regional maximum is 100.
  - **Severity**: Displays pixels in units of StDv from the normal mean.
  - **Def-Sev**: Displays all defect pixels that fall below the defect threshold in units of StDv below the normal mean.
  - **Blackout**: Displays all defect pixels that fall below the defect threshold with a zero value.
  - **DB Mean**: Displays normal database mean map for applied Normals database.
  - **DB StDv**: Displays normal database StDv map for applied Normals database.
  - **Thresholds**: Displays the number of standard deviations used to define the defect threshold.

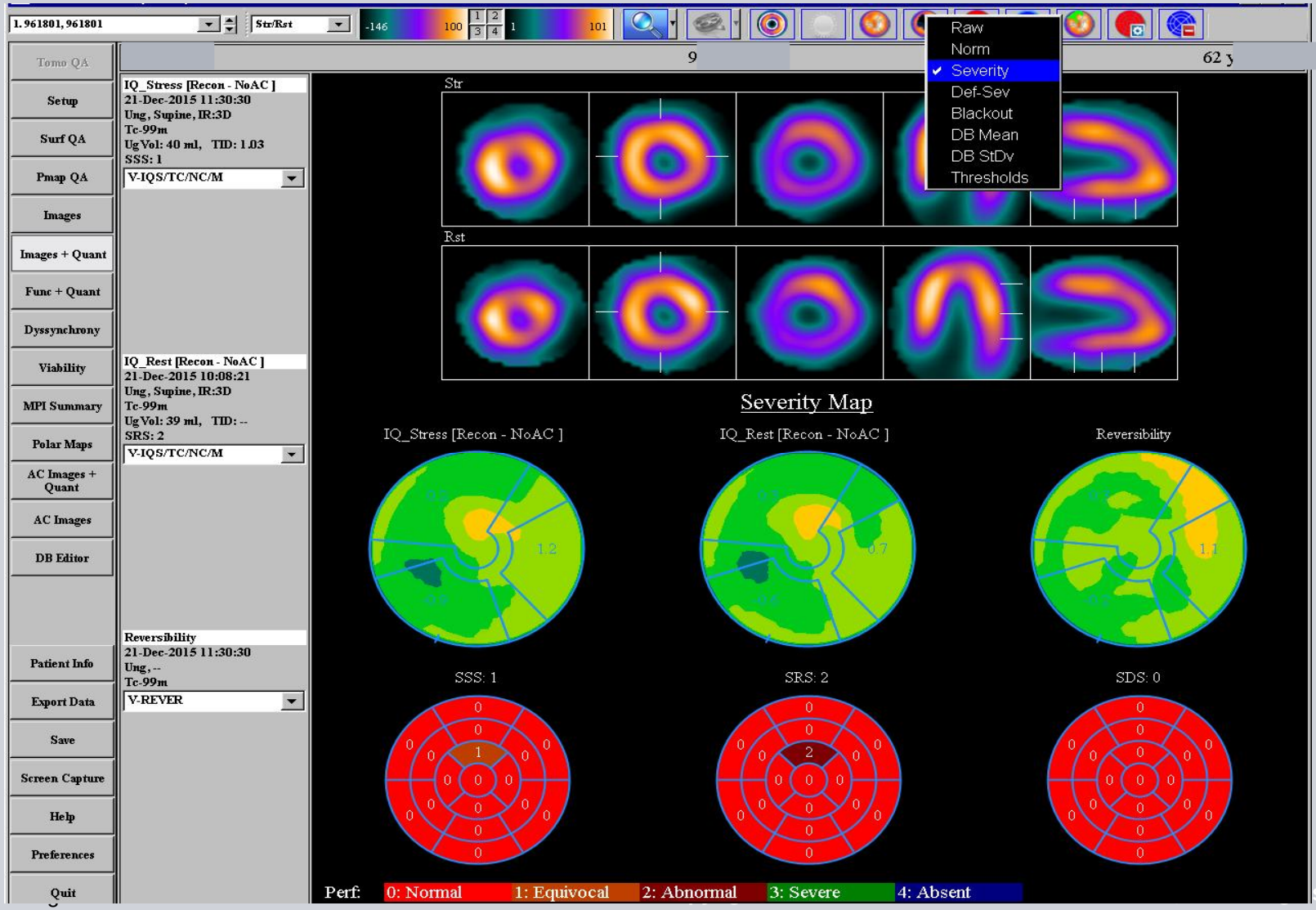
Raw :Display the values reconstructed from image voxel value



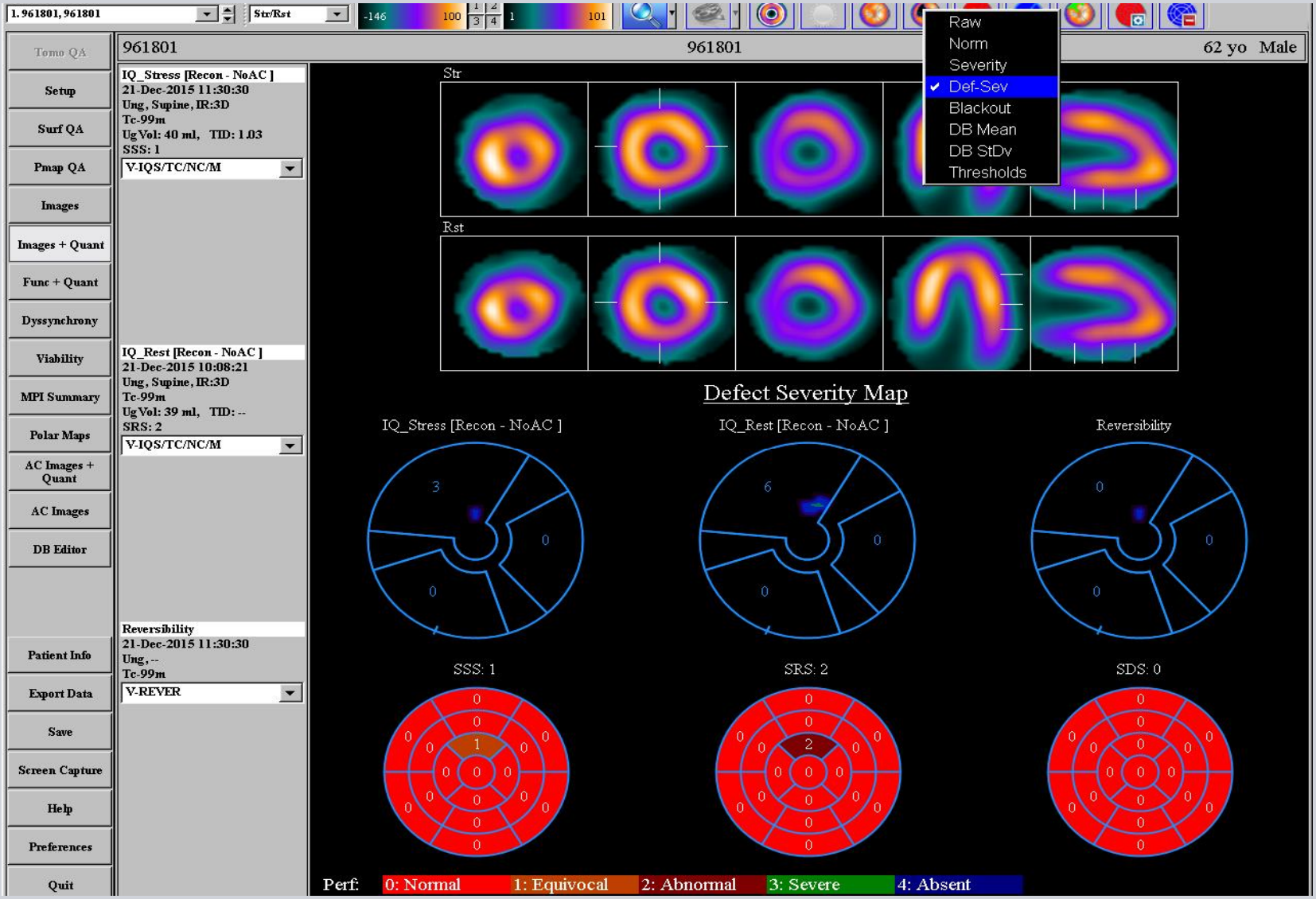
Norm: For Perfusion map , Displays values normalized such that regional maximum is 100



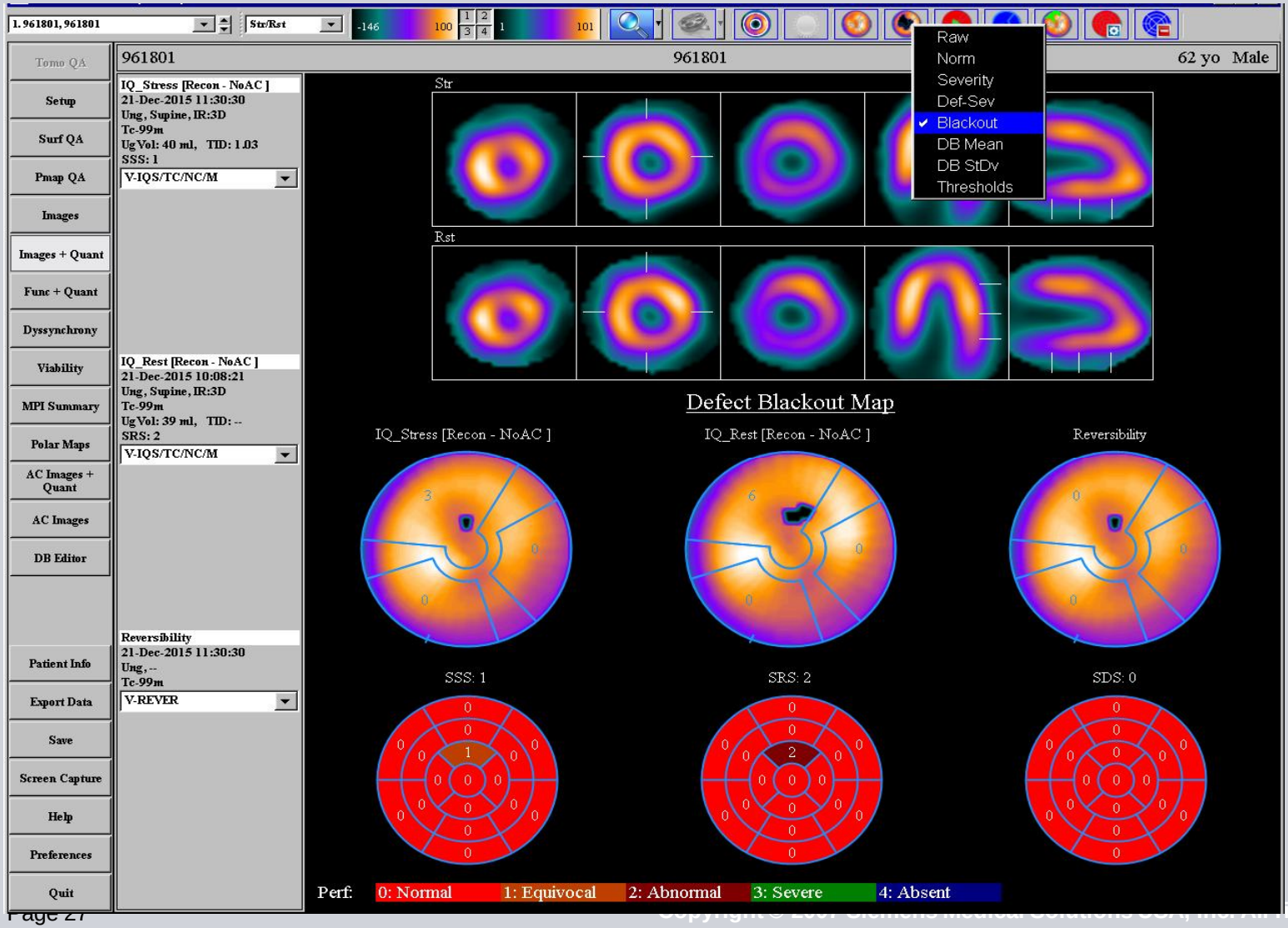
Severity: Displays pixels in units of StDv from the normal mean



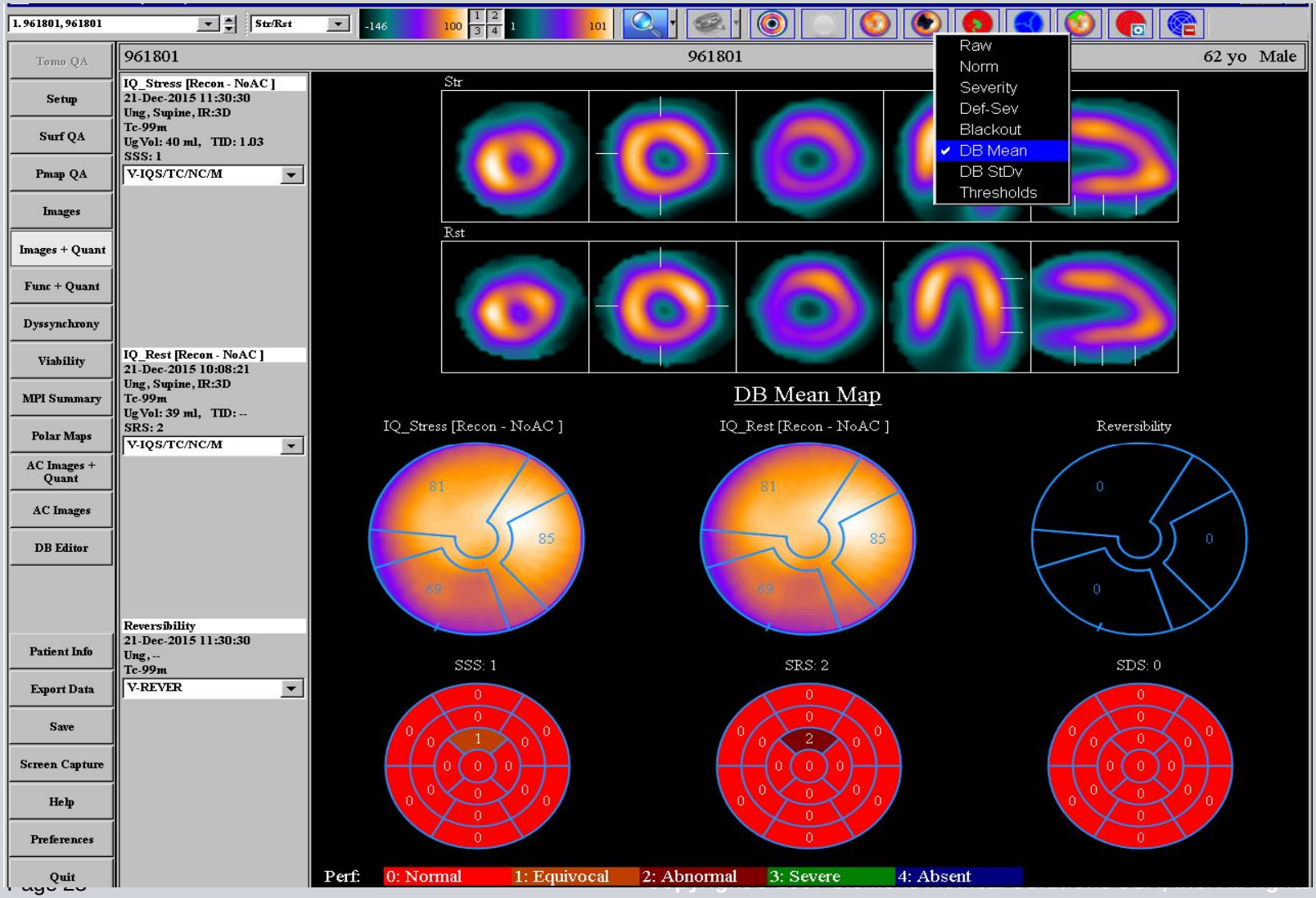
Def-Sev:
Displays all defect pixels that fall below the defect threshold in units of StDv below the normal mean



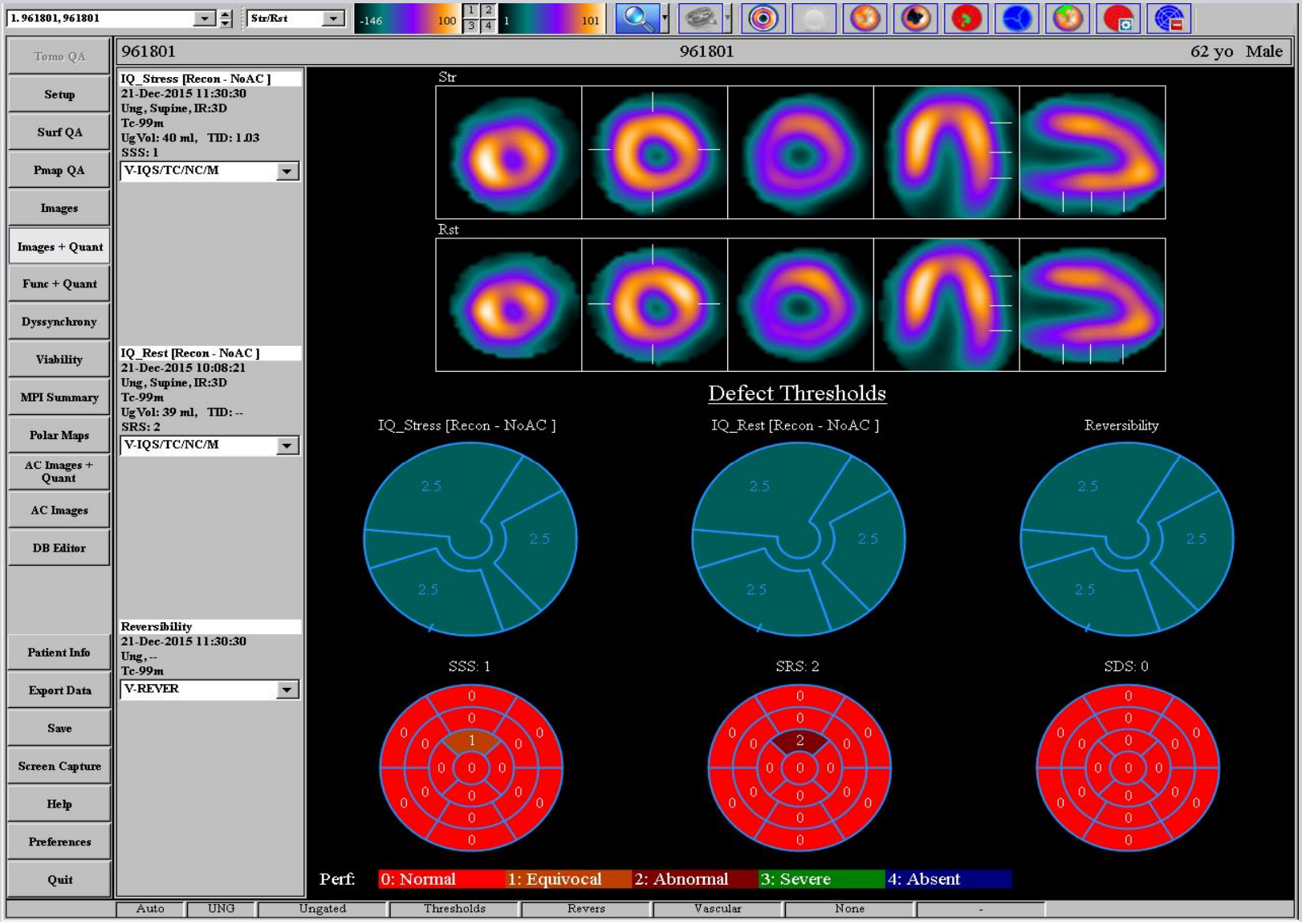
Blackout:
Displays all defect pixels that fall below the defect threshold with a zero value



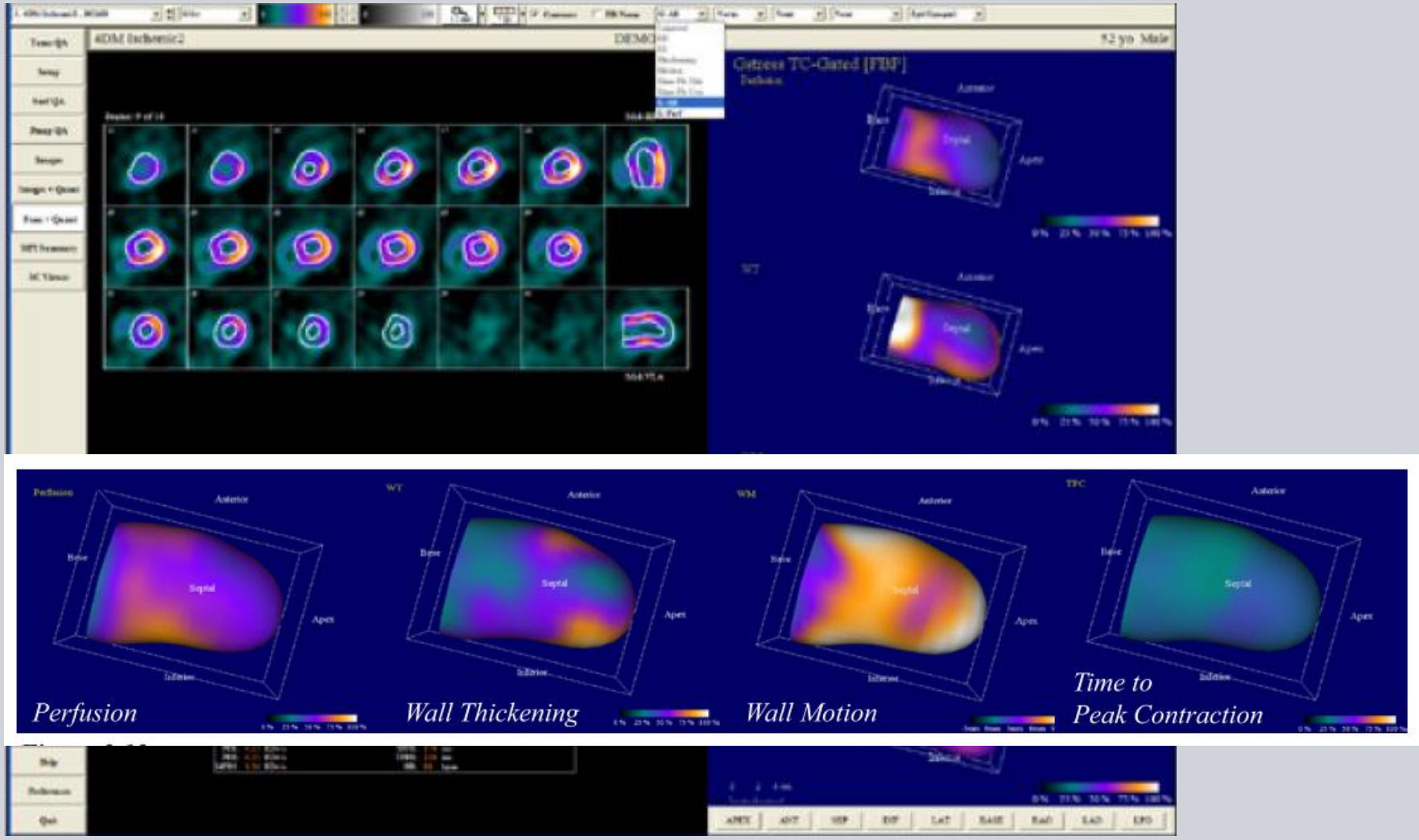
DB Mean :Displays normal database mean map for applied Normals database



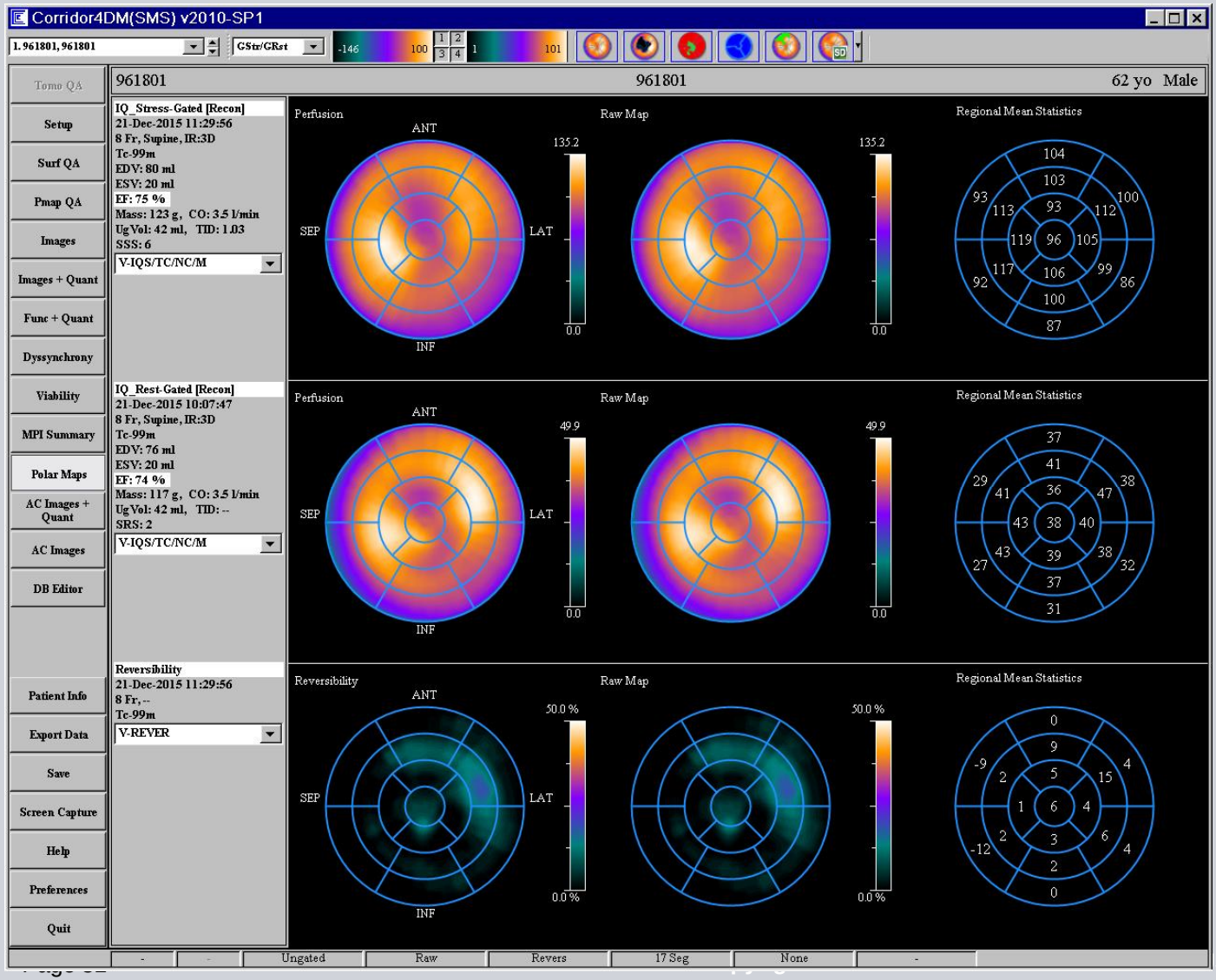
Thresholds: Displays the number of standard deviations used to define the defect threshold



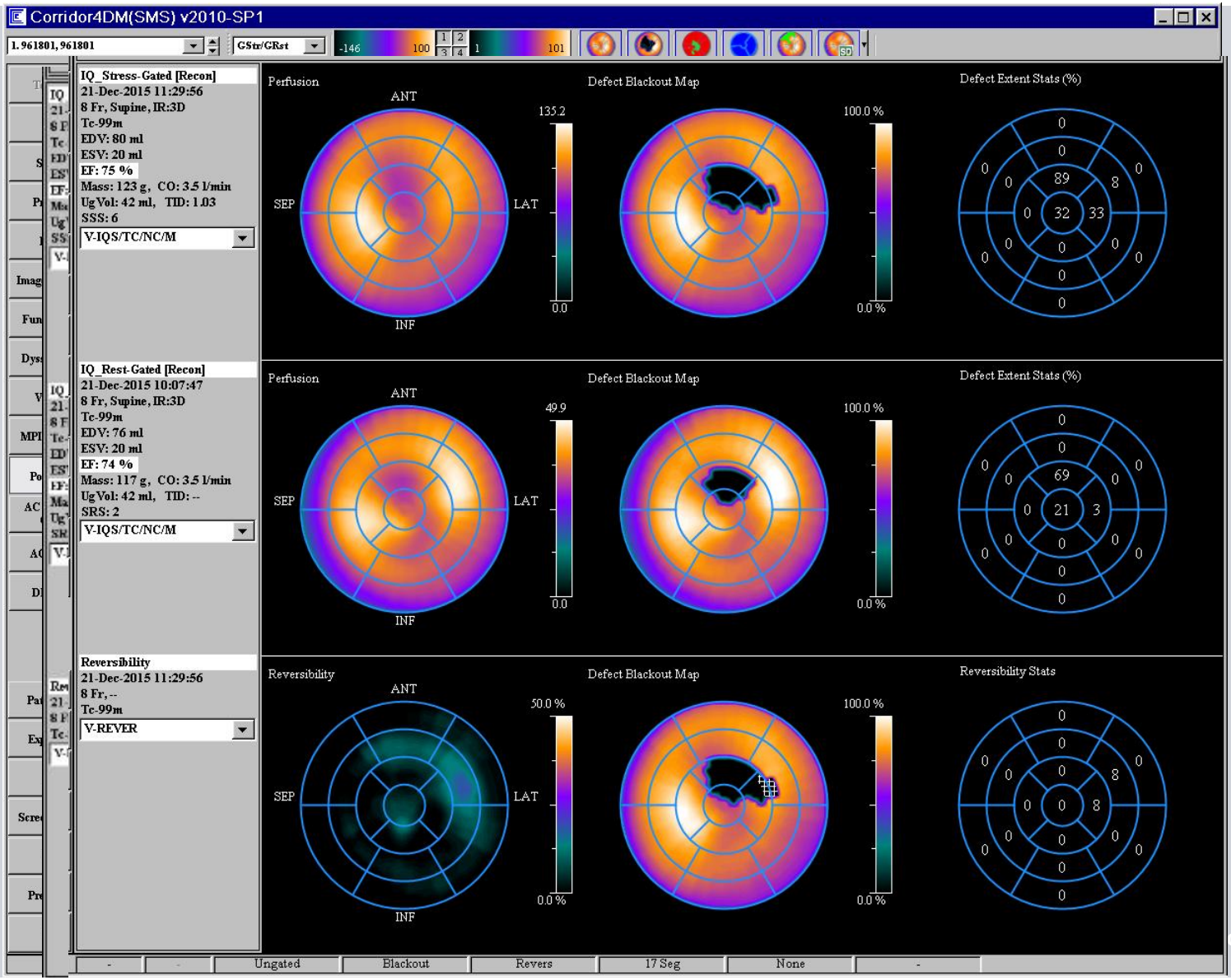
Func+Quant Page



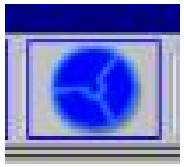
Polar map Page



Polar map Page

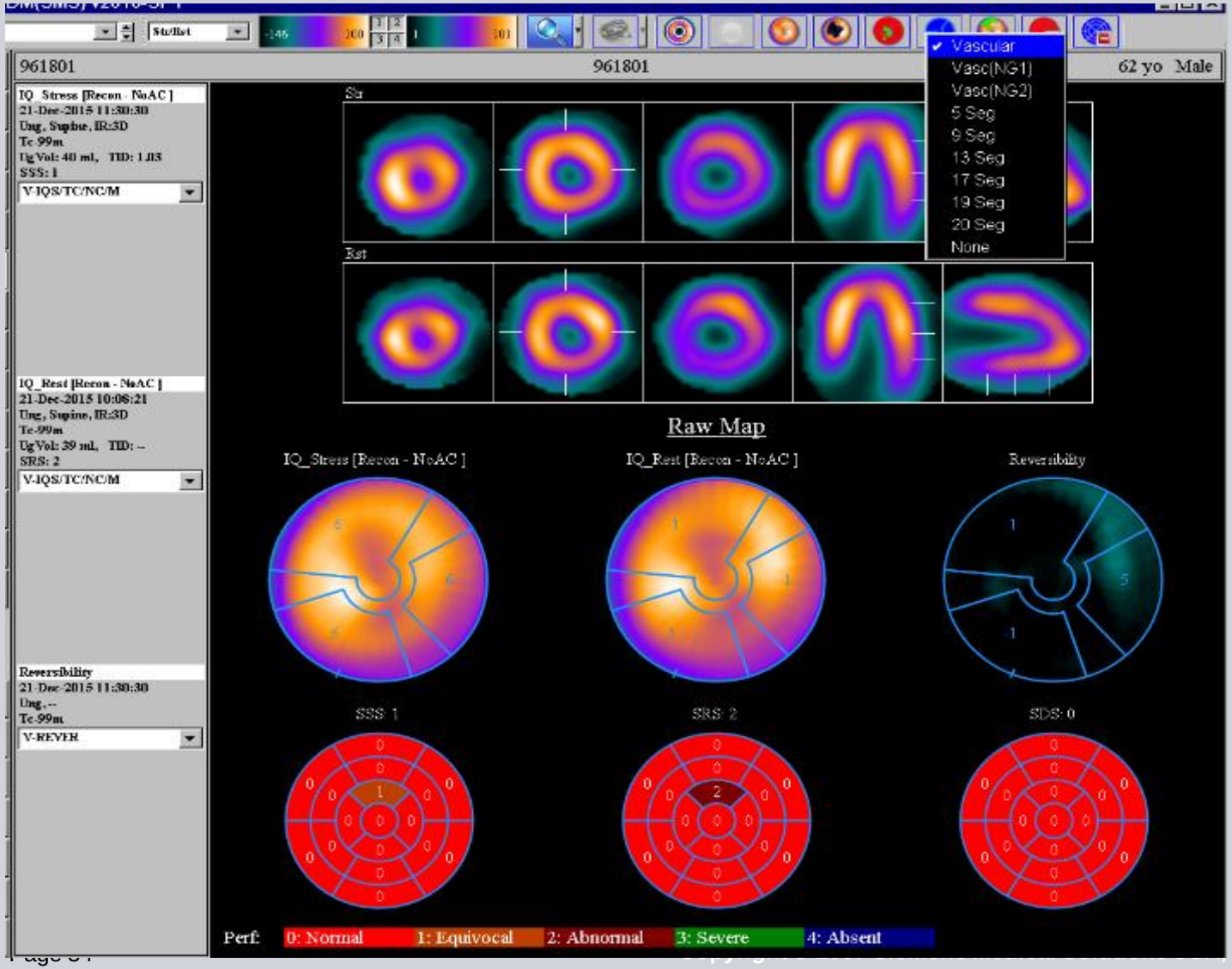


Segmental Menu

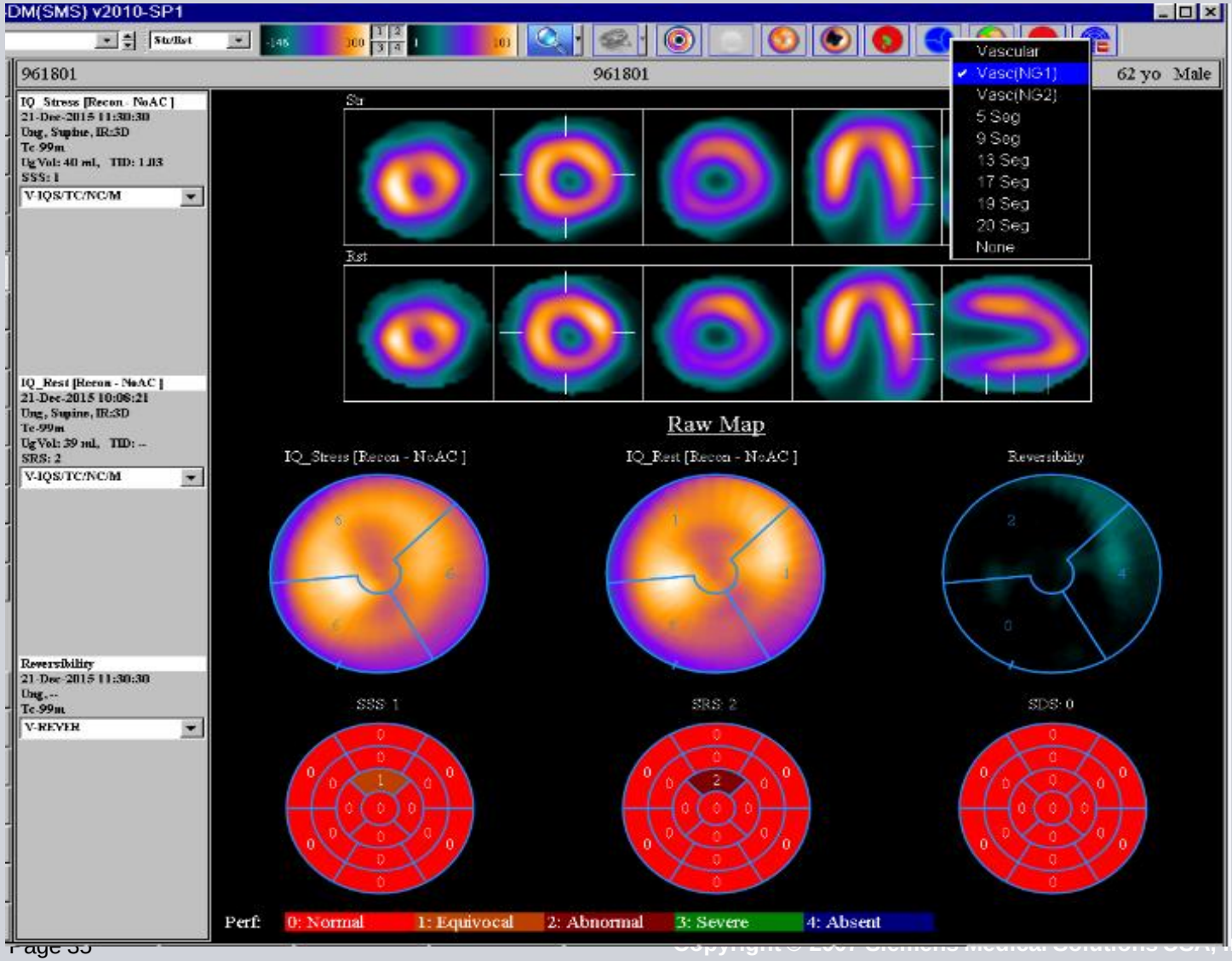


- **Segmental Overlay:** This drop-down menu changes the overlay used to calculate regional statistics for the polar map in the DB-Comparison panel. The available options are:
  - **Vascular**: LAD, LCx, and RCA vascular territories (4DM default).
  - **Vasc(NG1)**: **Vascular** overlay with no gaps between territories.
  - **Vasc(NG2)**: A second variation of the **Vascular** overlay with no gaps between territories.
  - **5 Seg**: Overlay of the four Myocardial Walls (ANT, LAT, INF, SEP) and the apical segment.
  - **9 Seg**
  - **13 Seg**
  - **17 Seg**
  - **19 Seg**
  - **20 Seg**
  - **Bar Plot:** Available on the **Polar Maps** screen only
  - **Circ Plot:** Available on the **Polar Maps** screen only
  - **None**: No overlay or statistics are displayed

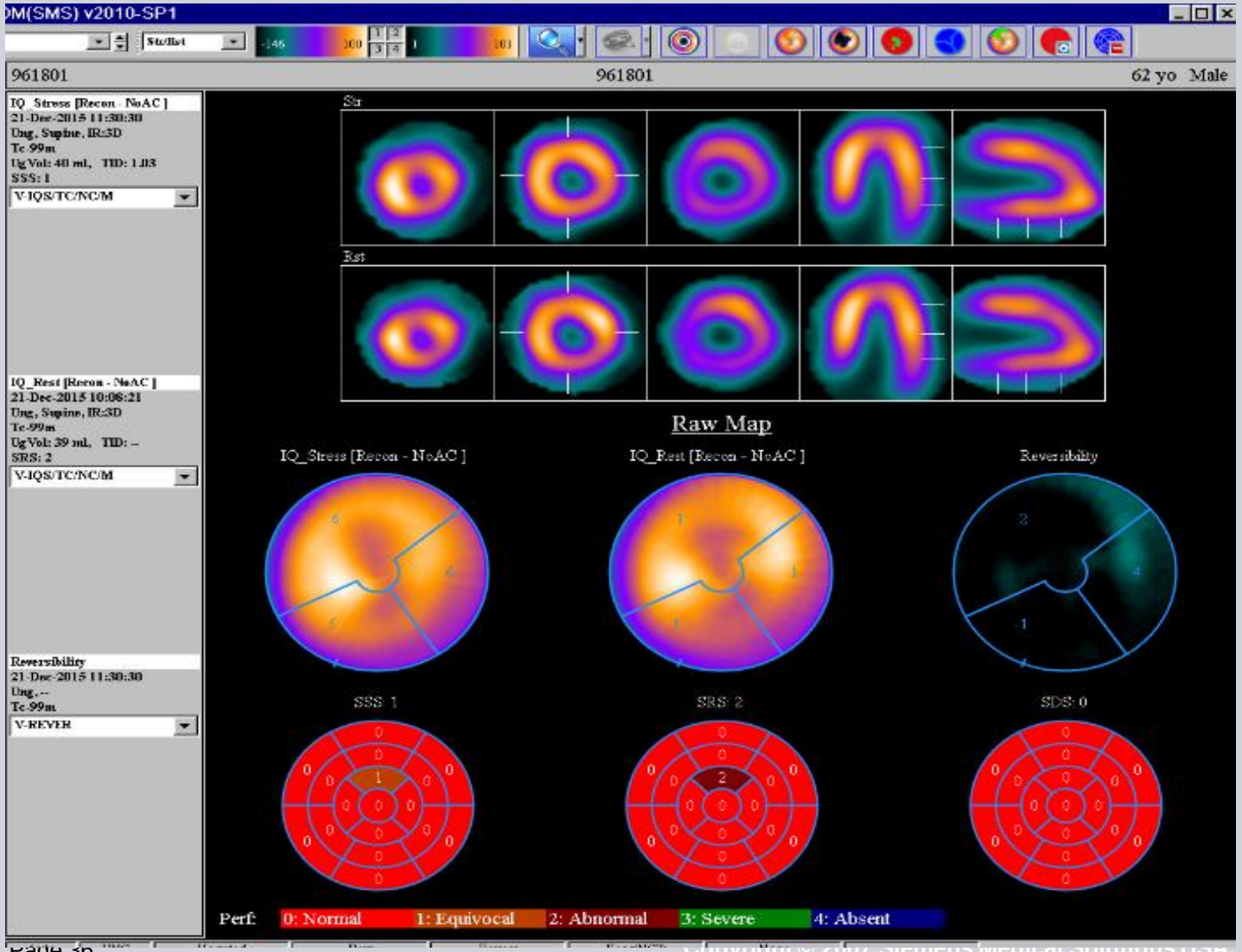
Segmental



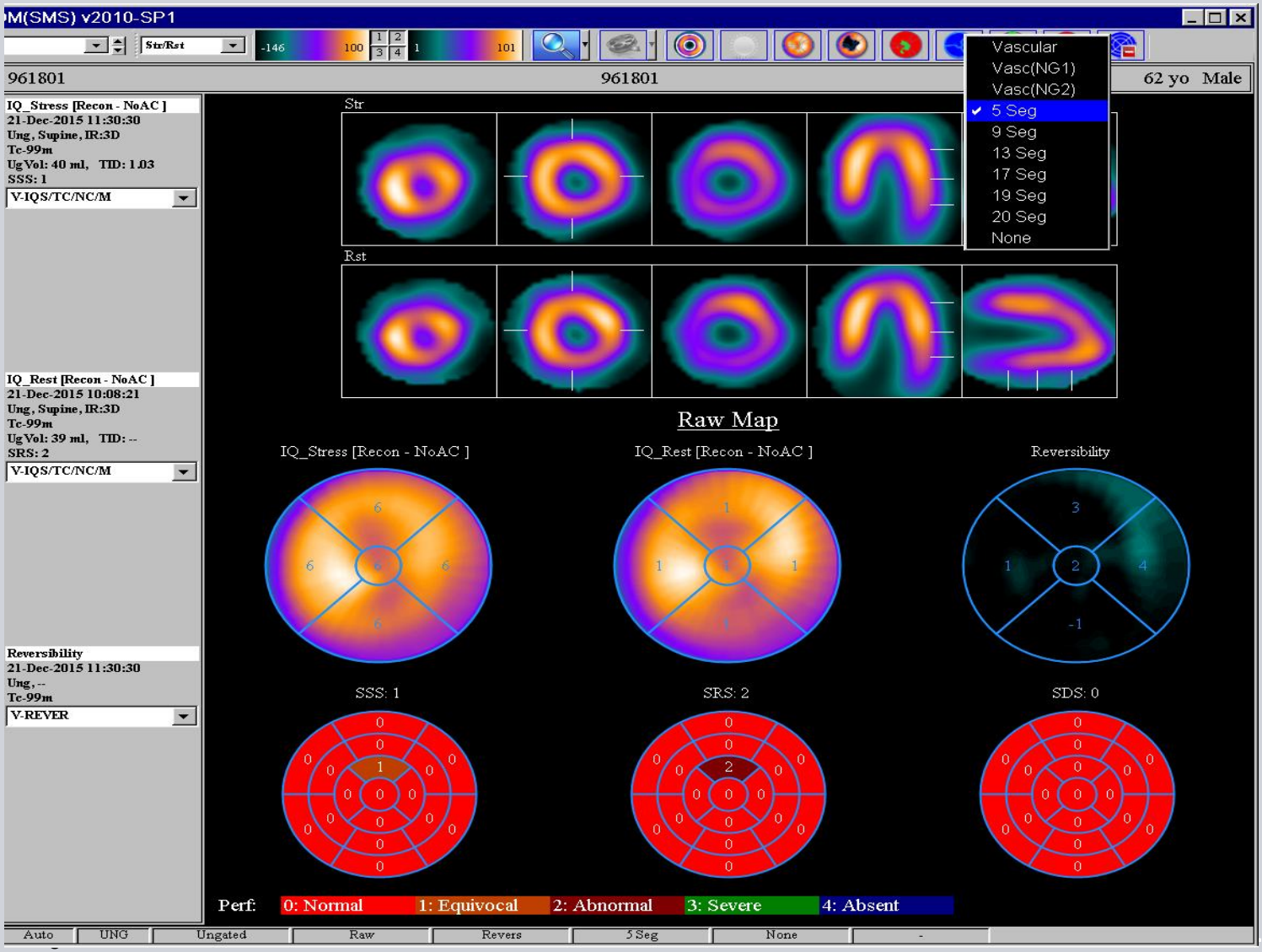
Vascular(NG1)



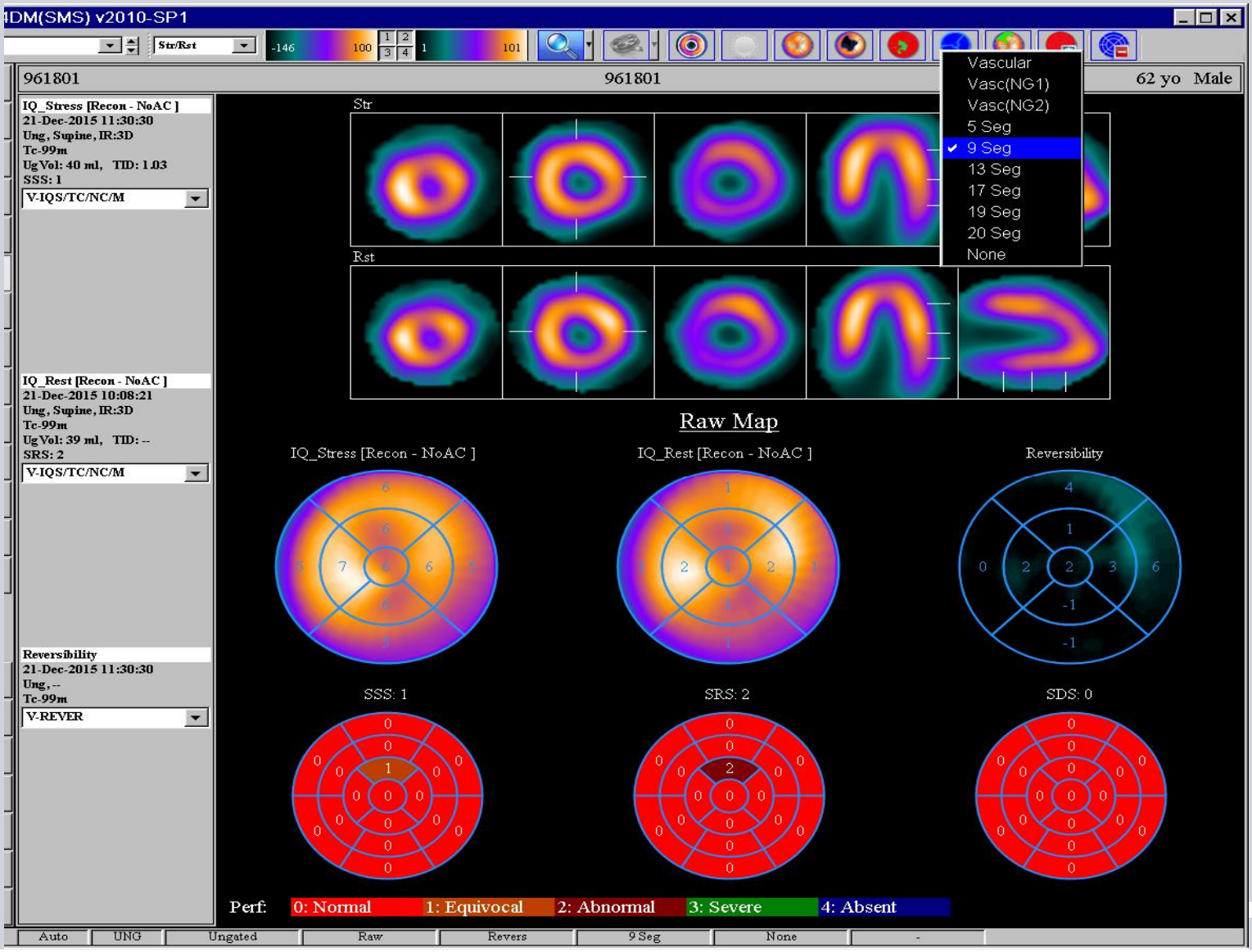
Vascular(NG2)



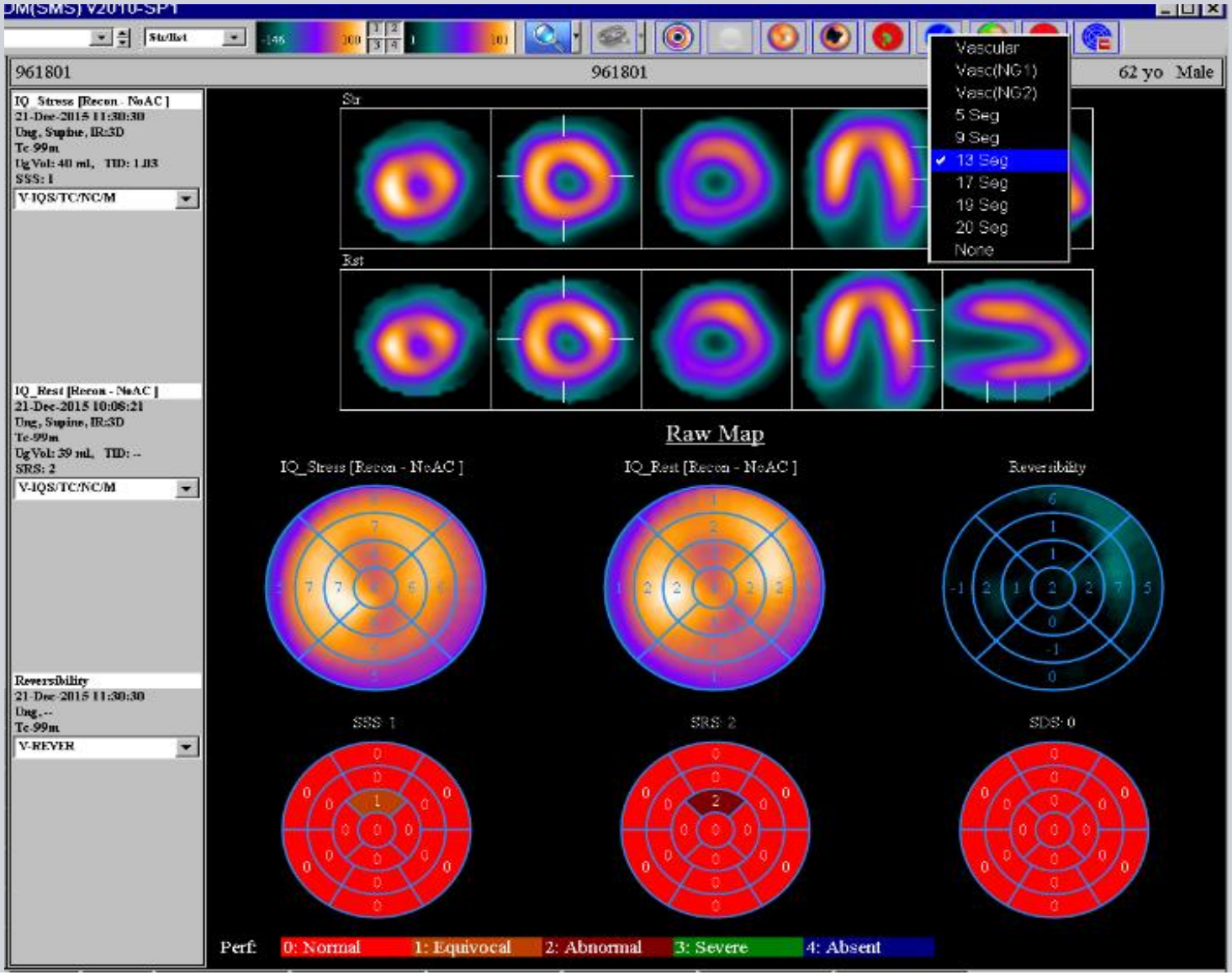
5 Seg



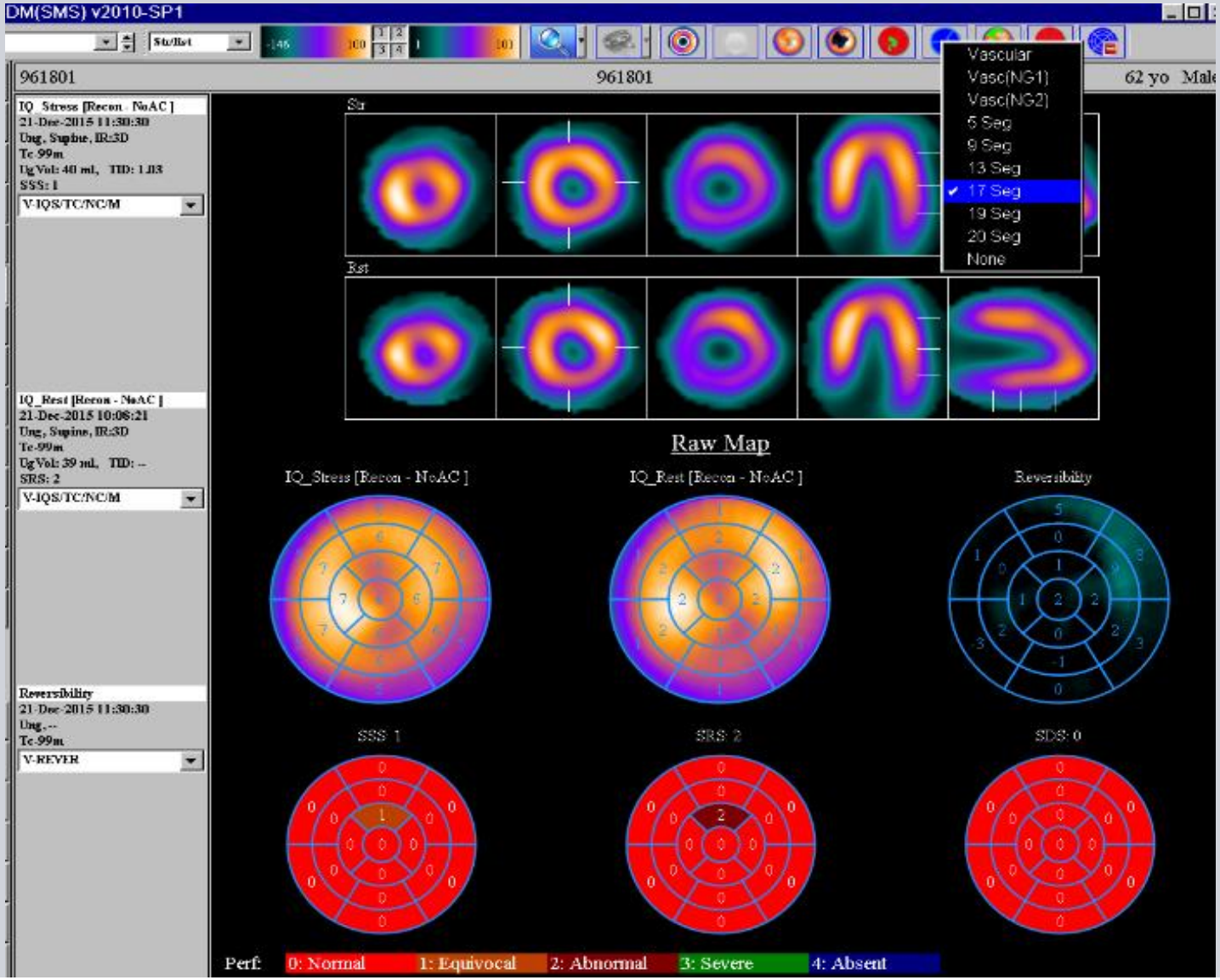
9 Seg



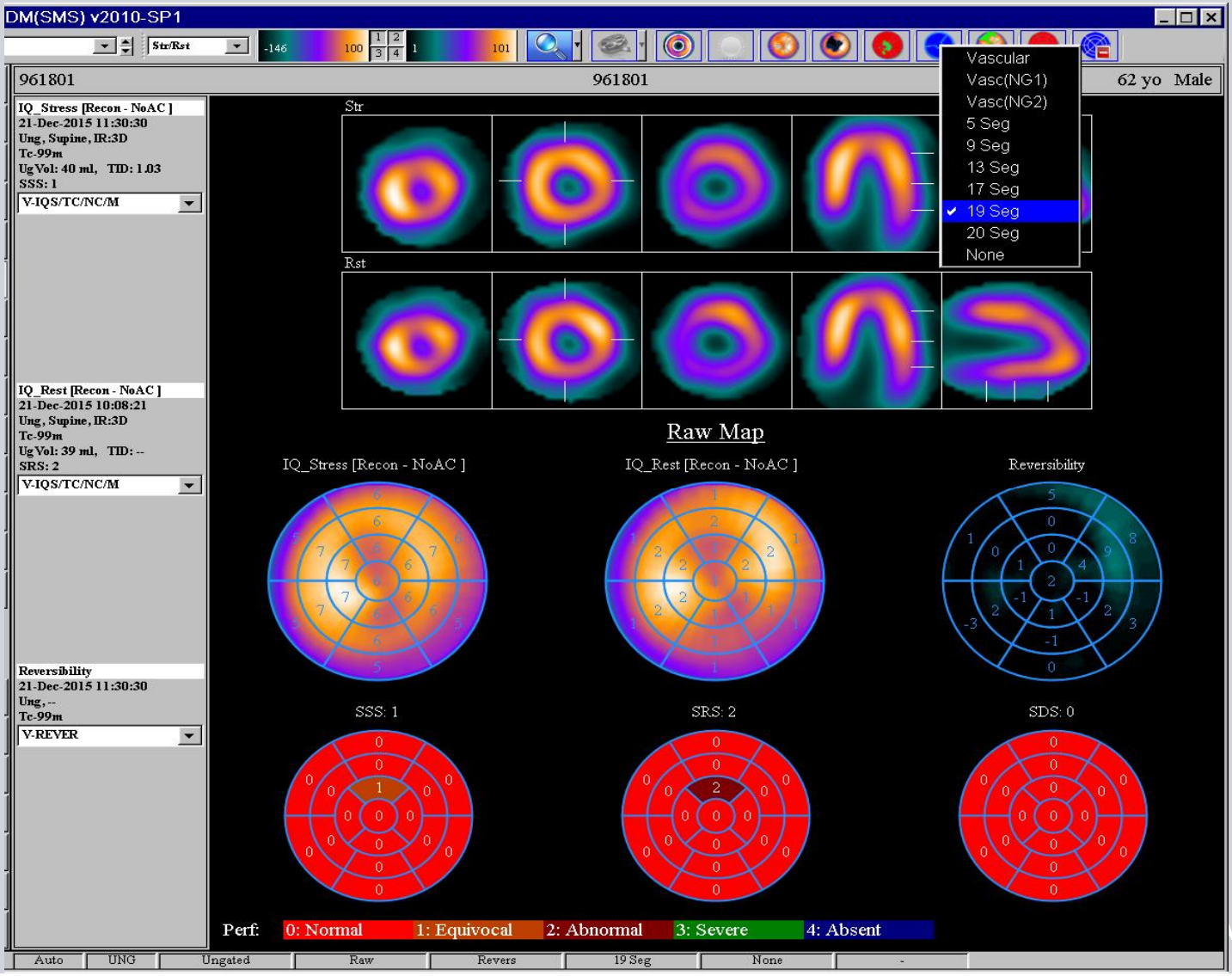
13 Seg



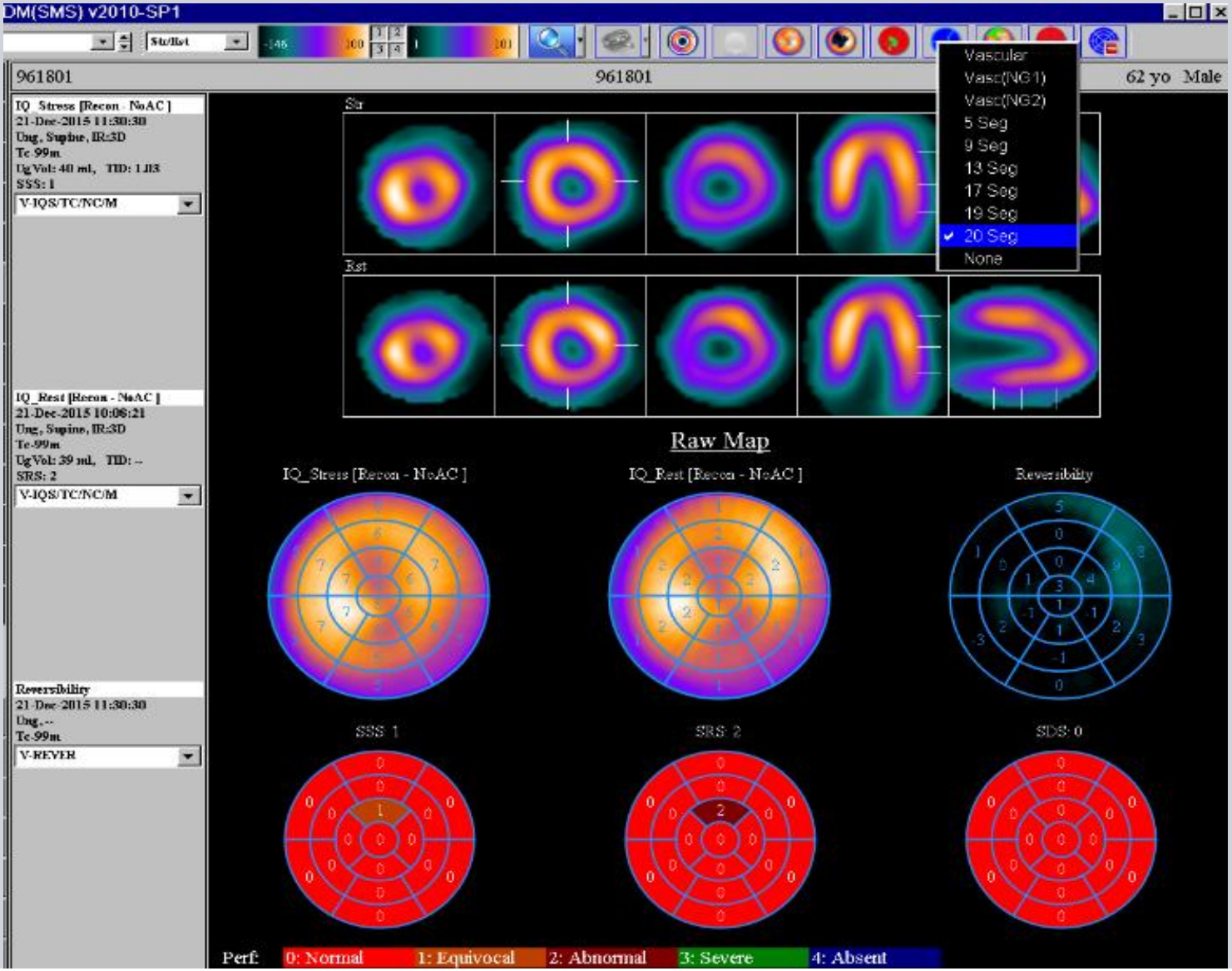
17 Seg



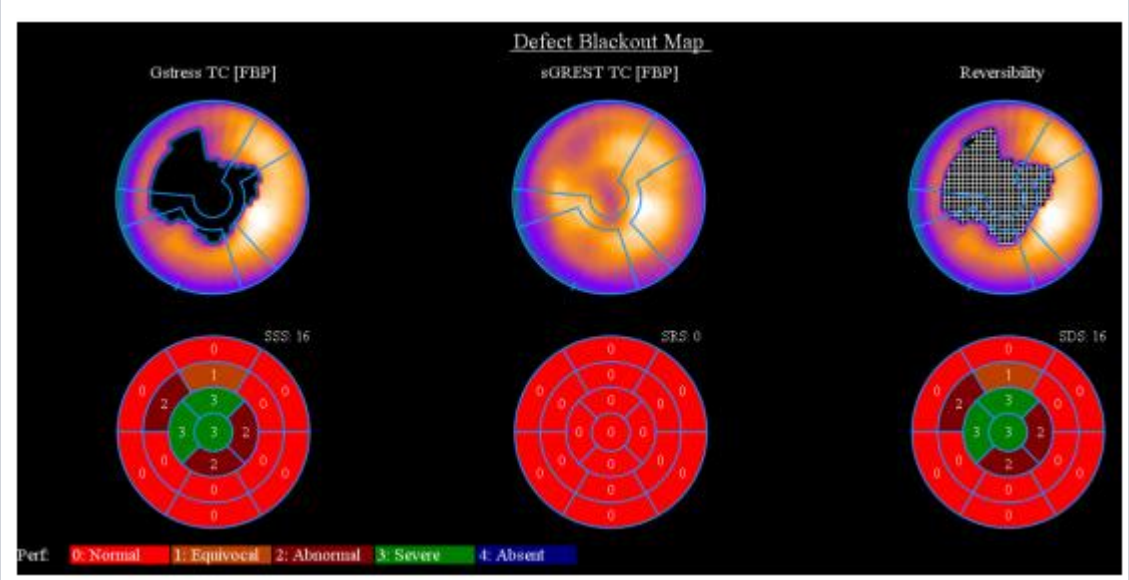
19 Seg



20 Seg



Scores



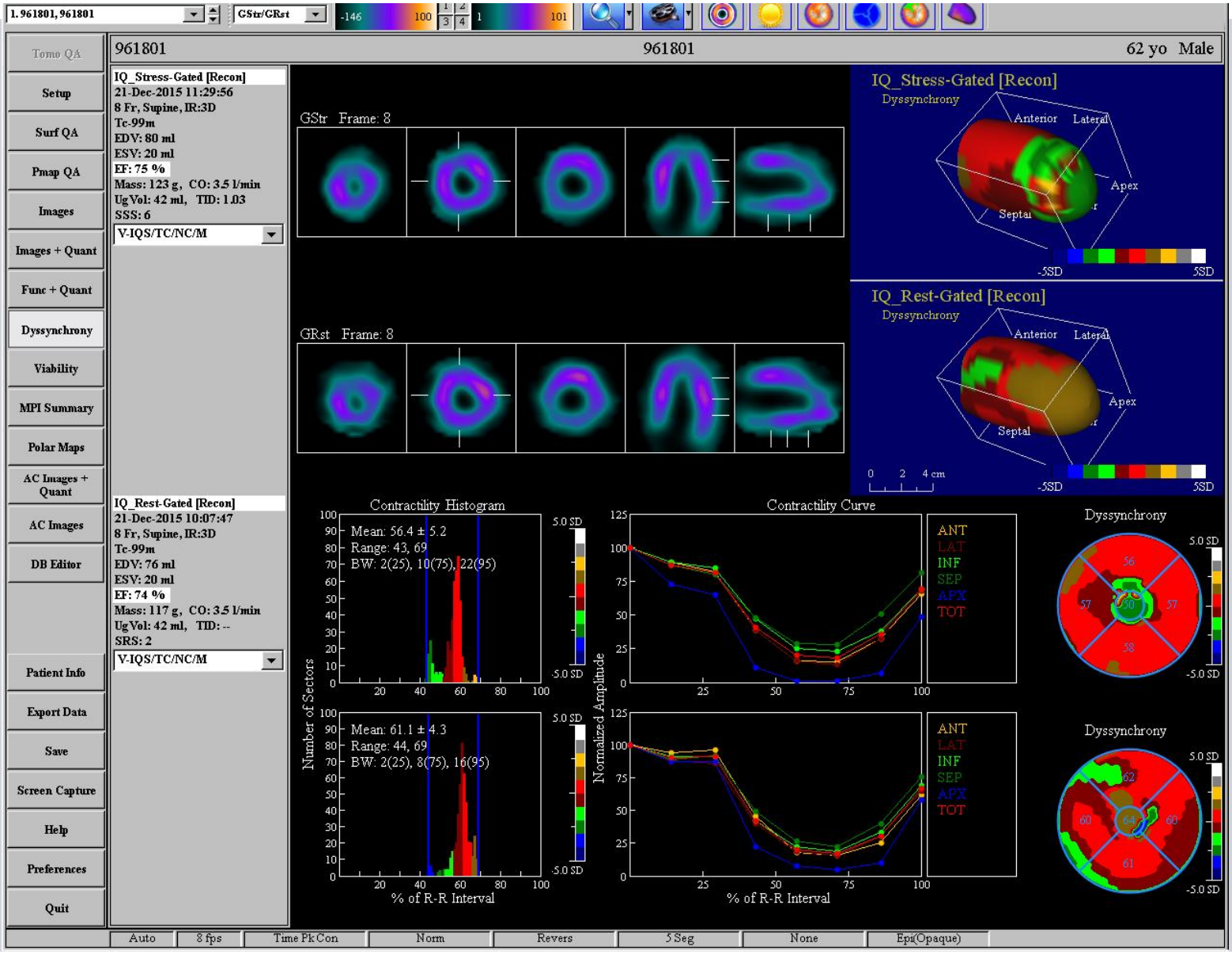
Score	Perfusion	Thickening	Motion
0	Normal	Normal	Normal
1	Equivocal defect	Equivocal	Equivocal
2	Abnormal	Abnormal	Hypokinetic
3	Severe defect	None	Akinetic
4	Absent Uptake		Dyskinetic

LV Function Normal Range

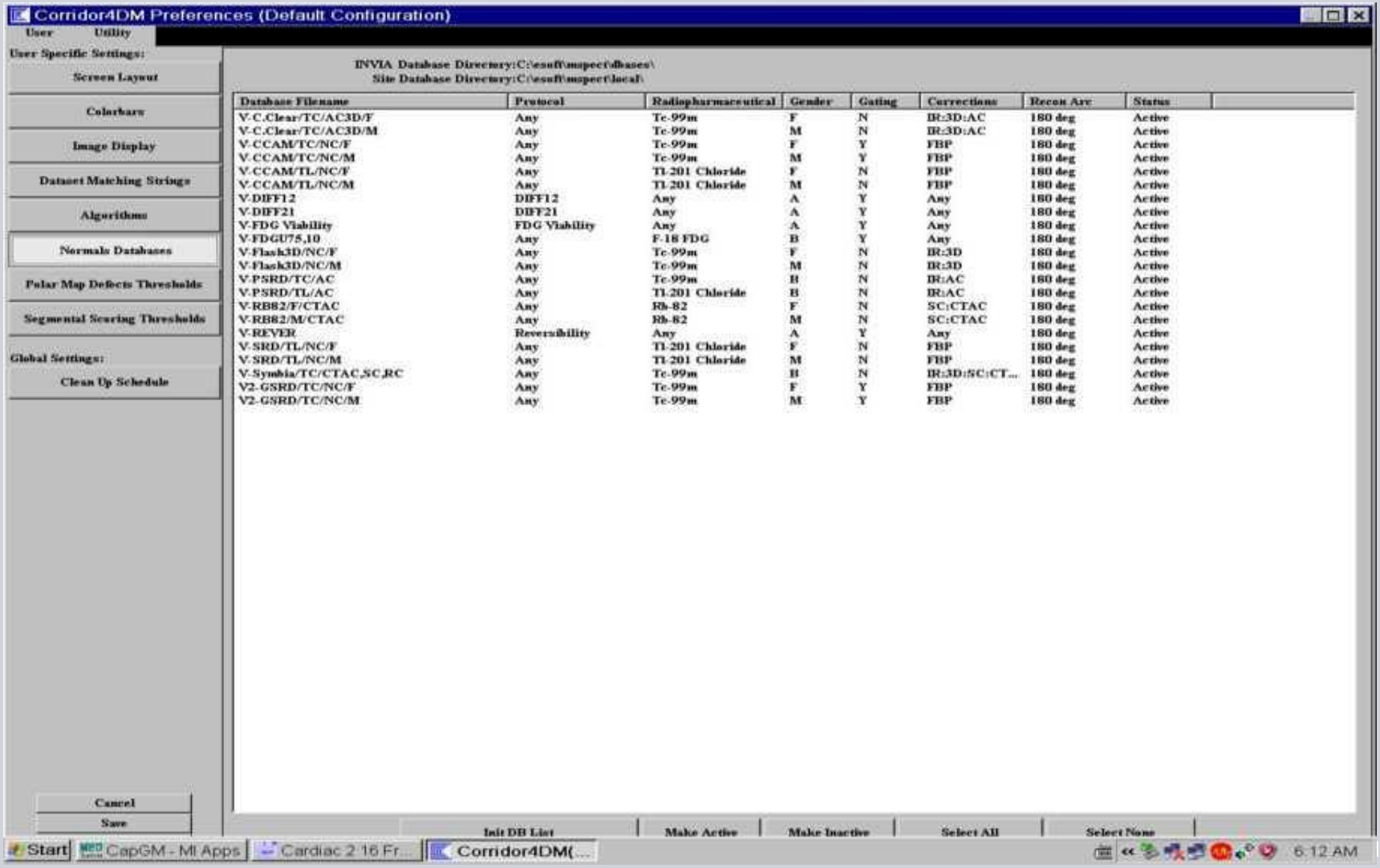
Table A.2. Normal LV Function Values for 8 Frame SPECT Studies

	4D-MSPECT	
	Male	Female
EF	59±6	68±6
EDv	123±30	80±19
EDv/BSA	61±15	46±10
ESv	51±20	26±9
ESv/BSA	26±10	15±5
Mass	155±21	122±16
Mass/BSA	78±10	70±8

Dysynchrony Page



Databases


Corridor4DM Preferences (Default Configuration)
User
Utility
User Specific Settings:
Screen Layout
Colorbars
Image Display
Dataset Matching Strings
Algorithms
Normals Databases
Polar Map Defects Thresholds
Segmental Scoring Thresholds
Global Settings:
Clean Up Schedule
Cancel
Save
INVIA Database Directory:C:\esoft\inspect\dBases\
Site Database Directory:C:\esoft\inspect\local\
Database Filename | Protocol | Radiopharmaceutical | Gender | Gating | Corrections | Recon Arc | Status
V-C,Clear/TC/AC3D/F | Any | Tc-99m | F | N | IR:3D:AC | 180 deg | Active
V-C,Clear/TC/AC3D/M | Any | Tc-99m | M | N | IR:3D:AC | 180 deg | Active
V-CCAM/TC/NC/F | Any | Tc-99m | F | Y | FBP | 180 deg | Active
V-CCAM/TC/NC/M | Any | Tc-99m | M | Y | FBP | 180 deg | Active
V-CCAM/TL/NC/F | Any | Tl-201 Chloride | F | N | FBP | 180 deg | Active
V-CCAM/TL/NC/M | Any | Tl-201 Chloride | M | N | FBP | 180 deg | Active
V-DIFF12 | DIFF12 | Any | A | Y | Any | 180 deg | Active
V-DIFF21 | DIFF21 | Any | A | Y | Any | 180 deg | Active
V-FDG Viability | FDG Viability | Any | A | Y | Any | 180 deg | Active
V-FDGU75,10 | Any | F-18 FDG | B | Y | Any | 180 deg | Active
V-Flash3D/NC/F | Any | Tc-99m | F | N | IR:3D | 180 deg | Active
V-Flash3D/NC/M | Any | Tc-99m | M | N | IR:3D | 180 deg | Active
V-PSRD/TC/AC | Any | Tc-99m | B | N | IR:AC | 180 deg | Active
V-PSRD/TL/AC | Any | Tl-201 Chloride | B | N | IR:AC | 180 deg | Active
V-RB82/F/CTAC | Any | Rb-82 | F | N | SC:CTAC | 180 deg | Active
V-RB82/M/CTAC | Any | Rb-82 | M | N | SC:CTAC | 180 deg | Active
V-REVER | Reversibility | Any | A | Y | Any | 180 deg | Active
V-SRD/TL/NC/F | Any | Tl-201 Chloride | F | N | FBP | 180 deg | Active
V-SRD/TL/NC/M | Any | Tl-201 Chloride | M | N | FBP | 180 deg | Active
V-Symbia/TC/CTAC,SC,RC | Any | Tc-99m | B | N | IR:3D:SC:CT... | 180 deg | Active
V2-GSRD/TC/NC/F | Any | Tc-99m | F | Y | FBP | 180 deg | Active
V2-GSRD/TC/NC/M | Any | Tc-99m | M | Y | FBP | 180 deg | Active
Init DB List
Make Active
Make Inactive
Select All
Select None
Start
CapGM - MI Apps
Cardiac 2 16 Fr...
Corridor4DM(...
6:12 AM

Tc_NAC Database

Database Name	Description	Protocol Support
V2-GSRD/TC/NC/F	Database for Tc-99m Sestamibi or Tetrofosmin specific to uncorrected (NC) female patients. Reconstruction algorithm is specific to filtered backprojection (FBP). This database has perfusion and functional information; thus, it can be used for gated and ungated studies.	• Stress study in a dual isotope protocol. • Stress or rest studies in a 2-day Tc-99m labeled radiotracer protocol. • Stress or rest study in a 1-day rest/stress Tc-99m labeled radiotracer protocol. • Stress or rest study in a 1-day stress/rest Tc-99m labeled radiotracer protocol. **WARNING** This database should only be used for uncorrected **FEMALE** studies reconstructed with FBP from data acquired from RAO-to-LPO.
V2-GSRD/TC/NC/M	Database for Tc-99m Sestamibi or Tetrofosmin tracers specific to uncorrected (NC) male patients. Reconstruction algorithm is specific to filtered backprojection (FBP). This database has perfusion and functional information; thus, it can be used for gated and ungated studies.	• Stress study in a dual isotope protocol. • Stress or rest studies in a 2-day Tc-99m labeled radiotracer protocol. • Stress or rest study in a 1-day rest/stress Tc-99m labeled radiotracer protocol. • Stress or rest study in a 1-day stress/rest Tc-99m labeled radiotracer protocol. **WARNING** This database should only be used for uncorrected **MALE** studies reconstructed with FBP from data acquired from RAO-to-LPO.

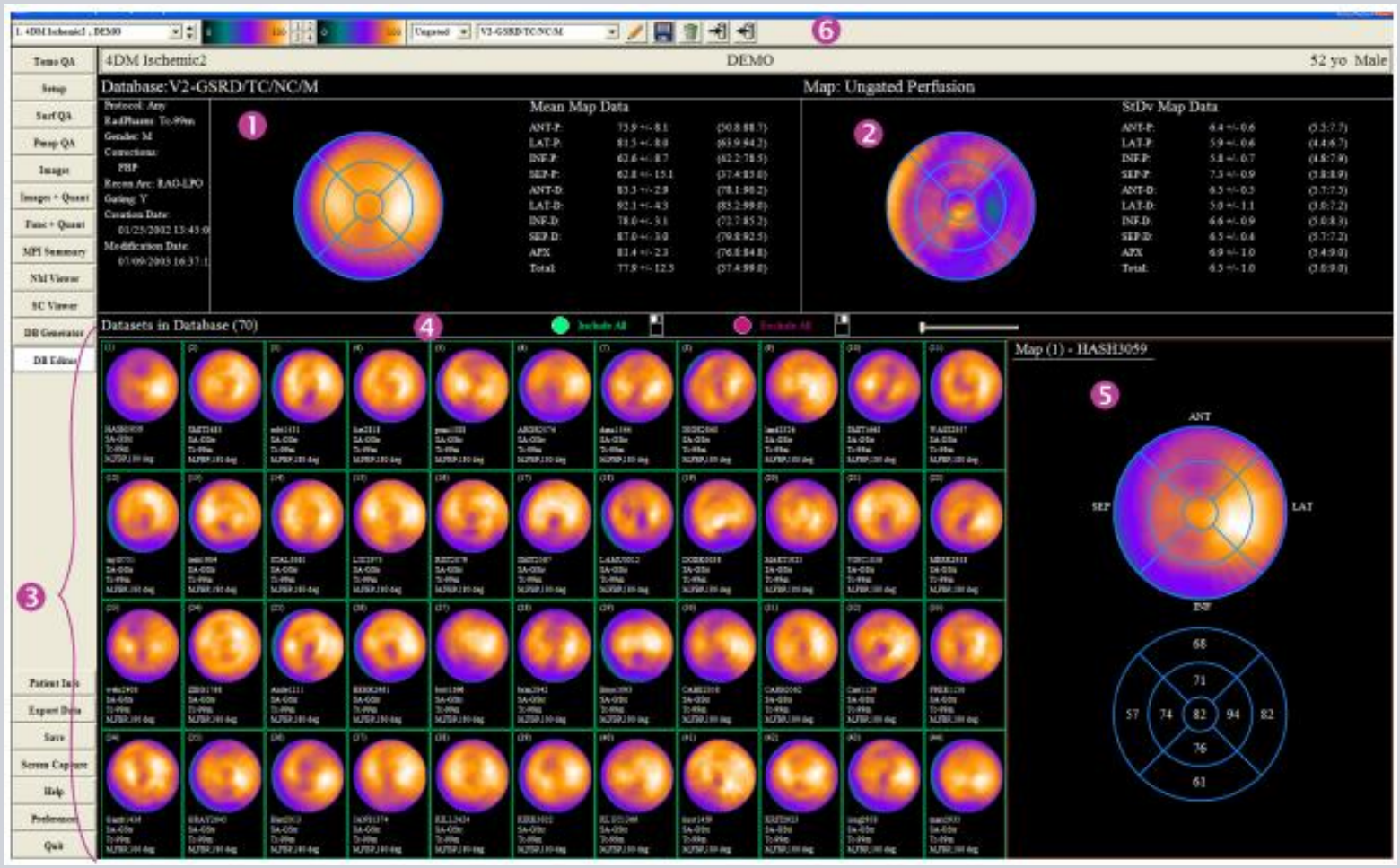
TL_NAC database

V-SRD/TL/NC/F	Tl-201 database specific to uncorrected (NC) female patients. Reconstruction algorithm is specific to filtered backprojection (FBP). This database can only be used for analysis of the perfusion data.	• Rest study in a dual isotope protocol. • Stress, rest, delay or redistribution study in a Tl-201 only protocol. **WARNING** This database should only be used for uncorrected **FEMALE** studies reconstructed with FBP from data acquired from RAO-to-LPO.
V-SRD/TL/NC/M	Tl-201 database specific to uncorrected (NC) male patients. Reconstruction algorithm is specific to filtered backprojection (FBP). This database can only be used for analysis of the perfusion data.	• Rest study in a dual isotope protocol. • Stress, rest, delay or redistribution study in a Tl-201 only protocol. **WARNING** This database should only be used for uncorrected **MALE** studies reconstructed with FBP from data acquired from RAO-to-LPO.

AC Database

V-PSRD/TC/AC	Database for Tc-99m Sestamibi or Tetrofosmin specific to Siemens PROFILE attenuation corrected (AC) studies. AC Reconstruction algorithm is specific to the Iter-W algorithm. This database can only be used for analysis of the perfusion data.	• Stress study in a dual isotope protocol. • Stress or rest studies in a 2-day Tc-99m labeled radiotracer protocol. • Stress or rest study in a 1-day rest/stress Tc-99m labeled radiotracer protocol. • Stress or rest study in a 1-day stress/rest Tc-99m labeled radiotracer protocol. **WARNING** In addition to the above, this database should only be used for **PROFILE** attenuation corrected images reconstructed with the Iter-W algorithm.
V-PSRD/TL/AC	Tl-201 database specific to Siemens PROFILE attenuation corrected (AC) studies. AC Reconstruction algorithm is specific to the Iter-W algorithm. This database can only be used for analysis of the perfusion data.	• Rest study in a dual isotope protocol. • Stress, rest, delay or redistribution study in a Tl-201 only protocol. **WARNING** In addition to the above, this database should only be used for **PROFILE** attenuation corrected images reconstructed with the Iter-W algorithm.
V-Symbia/TC/ CTAC,SC,RC	Database for Tc-99m Sestamibi or Tetrofosmin tracers specific to Siemens Symbia CT based Attenuation+Scatter+Flash3D corrected studies. This database can only be used for analysis of the perfusion data.	• Stress study in a dual isotope protocol. • Stress or rest studies in a 2-day Tc-99m labeled radiotracer protocol. • Stress or rest study in a 1-day rest/stress Tc-99m labeled radiotracer protocol. • Stress or rest study in a 1-day stress/rest Tc-99m labeled radiotracer protocol. **WARNING** In addition to the above, this database should only be used for Symbia studies which have reconstructed incorporating CTAC, scatter, and Flash3D corrections.

View Normal database



- End ~

- ***Thanks for your Attention***