

**RIH – PEDI CAROTID AND BRAIN CTA  
SIEMENS DEFINITION AS20 PROTOCOL**

**Indications: carotid/cerebral artery stenosis or aneurysm; non-trauma**

| <b>Position/Landmark</b>  | Supine head first or feet first<br>1cm superior to skull vertex   |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
|---|---|-----------------------|-------------|-----------------------|-----------|---------------------|---|--------------------------|-----------|-------------|--|---|-----------------------------|--------------|-------------|-----|---|-----------------------|-----------|-------------|-----|---|----------------------------------|------------|-------------|-----|---|--------------------------|--------------|-------------|-----|---|---------------------------|--------------|-------------|-----|---|-------------------------------|-----------|-------------|-----|---|----------------------------------|-----------|-------------|-----|
| <b>Topogram Direction</b>   | Craniocaudal / Craniocaudal   |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>Respiratory Phase</b>  | Any   |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>Scan Type</b>  | Helical   |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>Ref kV/Ref mAs/Rotation time (sec)<br/>Pitch / Speed (mm/rotation)<br/>Safire Strength / Dose Optimization</b> | Care kV 80 / Care Dose4D 160 / 0.5 sec<br>1.2:1 , 15.00mm<br>3 / 11   |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>Detector width x Rows = Beam<br/>Collimation</b>   | 0.625mm x 20 = 12.5mm   |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>Average Tube Output</b>  | ctdi – 5.1 mGy<br>dlp – 152 mGy.cm  |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>Helical Set</b><br>Slice Thickness/ Spacing<br>Algorithm<br>Recon Destination                                  | <table border="1"> <thead> <tr> <th>recon</th> <th>body part</th> <th>thickness/<br/>spacing</th> <th>algorithm</th> <th>recon destination .</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>thick neck and brain cta</td> <td>5mm x 5mm</td> <td>I26f smooth</td> <td></td> </tr> <tr> <td>2</td> <td><b>thin axial brain cta</b></td> <td>.75mm x .7mm</td> <td>I26f smooth</td> <td>pac</td> </tr> <tr> <td>3</td> <td><b>axial neck cta</b></td> <td>2mm x 2mm</td> <td>I26f smooth</td> <td>pac</td> </tr> <tr> <td>4</td> <td><b>thick axial brain cta mip</b></td> <td>10mm x 3mm</td> <td>I26f smooth</td> <td>pac</td> </tr> <tr> <td>5</td> <td><b>coronal brain cta</b></td> <td>.75mm x .7mm</td> <td>I26f smooth</td> <td>pac</td> </tr> <tr> <td>6</td> <td><b>sagittal brain cta</b></td> <td>.75mm x .7mm</td> <td>I26f smooth</td> <td>pac</td> </tr> <tr> <td>7</td> <td><b>right sag obl neck cta</b></td> <td>2mm x 2mm</td> <td>I26f smooth</td> <td>pac</td> </tr> <tr> <td>8</td> <td><b>left sag oblique neck cta</b></td> <td>2mm x 2mm</td> <td>I26f smooth</td> <td>pac</td> </tr> </tbody> </table> | recon                 | body part   | thickness/<br>spacing | algorithm | recon destination . | 1 | thick neck and brain cta | 5mm x 5mm | I26f smooth |  | 2 | <b>thin axial brain cta</b> | .75mm x .7mm | I26f smooth | pac | 3 | <b>axial neck cta</b> | 2mm x 2mm | I26f smooth | pac | 4 | <b>thick axial brain cta mip</b> | 10mm x 3mm | I26f smooth | pac | 5 | <b>coronal brain cta</b> | .75mm x .7mm | I26f smooth | pac | 6 | <b>sagittal brain cta</b> | .75mm x .7mm | I26f smooth | pac | 7 | <b>right sag obl neck cta</b> | 2mm x 2mm | I26f smooth | pac | 8 | <b>left sag oblique neck cta</b> | 2mm x 2mm | I26f smooth | pac |
| recon   | body part   | thickness/<br>spacing | algorithm   | recon destination .   |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| 1   | thick neck and brain cta  | 5mm x 5mm             | I26f smooth |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| 2   | <b>thin axial brain cta</b>   | .75mm x .7mm          | I26f smooth | pac                   |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| 3   | <b>axial neck cta</b>   | 2mm x 2mm             | I26f smooth | pac                   |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| 4   | <b>thick axial brain cta mip</b>  | 10mm x 3mm            | I26f smooth | pac                   |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| 5   | <b>coronal brain cta</b>  | .75mm x .7mm          | I26f smooth | pac                   |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| 6   | <b>sagittal brain cta</b>   | .75mm x .7mm          | I26f smooth | pac                   |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| 7   | <b>right sag obl neck cta</b>   | 2mm x 2mm             | I26f smooth | pac                   |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| 8   | <b>left sag oblique neck cta</b>  | 2mm x 2mm             | I26f smooth | pac                   |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>Scan Start / End Locations</b>   | 1cm inferior to aortic arch<br>Skull vertex<br>20cm   |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>DFOV</b>   | decrease appropriately  |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>IV Contrast Volume / Type / Rate</b>   | Contrast volume is 1cc per pound of body weight<br>Omnipaque300 / 4cc per second<br><br>or hand injection if necessary  |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>Scan Delay</b>   | 18 seconds  |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>2D/3D Technique Used</b>   | Workstream 4d mpr <b>axial, sagittal and coronal cta reformats</b> .75 mm x .7mm, <b>thick axial reformats</b> , 10.0mm x 3.0mm, mip mode, auto transferred to PACS   |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |
| <b>Images required in PACS</b>  | Topograms, .75mm x .7mm axial coronal sagittal brain cta, 10mm x 3mm axial brain cta mip, 2mm x 2mm axial coronal sagittal oblique neck cta, Patient Protocol   |                       |             |                       |           |                     |   |                          |           |             |  |   |                             |              |             |     |   |                       |           |             |     |   |                                  |            |             |     |   |                          |              |             |     |   |                           |              |             |     |   |                               |           |             |     |   |                                  |           |             |     |