Carotid Artery Stent (CAS) Registry: Data Collection and Challenges

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CAS Registry Inclusion (5/1/2017)

▪ Inclusion: Carotid artery stents that involve the carotid bifurcation or are isolated to the internal, external, or common carotid artery that may be performed by percutaneous or open (cut down) approach.

▪ Both primary and redo stenting is included. Unlike other procedures, stenting for trauma is also included.

▪ Typically, the carotid bifurcation or internal carotid artery is treated, but sometimes an isolated common carotid stenosis is treated alone, or in combination with a bifurcation/internal carotid stent.

▪ Rarely the external carotid is treated but we are including it to meet CAS recertification requirements.

▪ The data entry form allows any of the four locations to be recorded for compliance with CMS Carotid Stent reporting.
CAS Registry Exclusion (5/1/2017)

- Intracranial Carotid Artery stents (above C1)

Notes:

- If the procedure failed when attempting to place the long sheath in the CCA, this should be recorded as a “technical failure” on the procedure tab.
- If bilateral Carotid Artery Stent procedures are done on the same day, please enter as two separate procedures.
CAS Registry Enhancements

- Late 2016-early 2017 enhancements released for CAS registry
  - improved overall functionality - dependent variables, green/red indicator tabs, aligned variables and definitions with other VQI registries (i.e., ambulatory status vs functional status)
  - inclusion criteria updated
  - updated data fields, particularly procedural data fields & those pertaining to TCAR
Enhancements led to generation of “new” CAS data collection forms

- not to be used for TCAR pts when physician is participating in Crest 2 clinical trial (use “old” form in that case)
- mapping of “old” forms to “new” forms
## Pre-Procedure Information

<table>
<thead>
<tr>
<th>High Risk for CEA</th>
<th>No</th>
<th>Medical</th>
<th>Anatomic</th>
<th>Both</th>
</tr>
</thead>
</table>

If *High Risk for CEA* is *Medical* or *Both*,

**Medical High Risk Factors**
- Age >= 75
- Severe Angina
- Severe Pulmonary Disease
- Need Heart Surgery

**Medical High Risk Factors**
- CHF class 3-4
- CAD >= 2 vessel
- CKD, Creat > 2.5mg/dl
- Need Major Surgery
- LVEF < 30%
- MI < 6 weeks

If *High Risk for CEA* is *Anatomic* or *Both*,

**Anatomic High Risk Factors**
- Prior ipsilat CEA
- Contralat ICA occlusion
- Laryngeal nerve palsy
- Lesion above C2
- Lesion below clavicle
- Prior neck radiation
- Stoma in neck
- Prior radical neck surg
- Cervical immobility
- Tandem ICA stenosis > 70%

**Refused for Surgery**
- No
- Yes
- Not evaluated by surgeon
### Pre-Procedure Imaging

If *Pre-op Imaging* is CT/CTA,

- **Lesion Calcification**
  - None
  - <=25% circumference
  - 26-50% circumference
  - 51-99% circumference
  - 100% circumferential
  - Protruding into lumen

- **Arch Atherosclerosis**
  - Mild
  - Moderate
  - Severe
Procedure Information

- **Urgency**: □ Elective  □ Urgent  □ Emergent
- **ASA Class**: □ 1  □ 2  □ 3  □ 4  □ 5
- **Anesthesia**: □ Local  □ Regional  □ General  □ Local/regional converted to general
- **Indication**: □ Asymptomatic stenosis  □ Symptomatic stenosis  □ Part of intracranial treatment
- **Arch Type**: □ Type I  □ Type II  □ Type III
- **Bovine Arch**: □ No  □ Yes
- **Approach**: □ Femoral  □ Carotid percutaneous  □ Carotid open  □ Brachial  □ Radial  □ Other
- **Medication Loading**: □ None  □ ASA or P2Y12 antagonist  □ Statin  □ Both
- **Prophylactic Anti-bradyarrhythmic**: □ No  □ Yes
- **Anticoagulant**: □ None  □ Heparin  □ Bilvalirudin  □ Argatroban  □ Other
  - If Anticoagulant is Heparin, Protamine □ No  □ Yes
- **Antiplatelet IIb/IIIa Inhibitor Treatment**: □ No  □ Yes
- **Bradyarrhythmia Requiring Tx**: □ No  □ Yes, medication  □ Yes, temporary pacing  □ Yes, permanent pacemaker
- **Contrast Volume**: ________ ml  Fluoroscopy Time: ________ minutes
- **Dose Area Report**: ________ Gy.cm²  Total Procedure Time: ________ minutes
## Procedure Information

### Lesions Treated:
- Distinct Lesions Treated: □ 1 □ 2

- If *Distinct Lesions Treated* is 1, Second Stenosis (Not Treated): □ No □ Yes
- If *Second Stenosis* is Yes, Second Stenosis Severity: ___________%

### Lesion 1:
- **Lesion Type**
  - □ Atherosclerosis
  - □ Re-stenosis of CEA
  - □ Re-stenosis of stent
  - □ Re-stenosis graft
  - □ Dissection
  - □ Trauma
  - □ FMD
  - □ Other

- **Lesion Side**
  - □ Right
  - □ Left

- **Lesion Location**
  - □ Bifurcation
  - □ CCA
  - □ ICA
  - □ ECA

- **Lesion Length**: ___________ mm
- **Lesion Stenosis**: ___________%

- If *Lesion 1 Location* is *Bifurcation* or ICA,
  - ICA Distal Tortuosity: □ None/mild □ Moderate □ Severe

- **Protection Device Used**
  - □ No
  - □ Yes, successful
  - □ Yes, unable to insert
  - □ Yes, other failure

- If *Protection Device Used* is **NOT** No,
  - **Protection Device Type**
    - □ Distal embolic protection device
    - □ Flow reversal
If **Protection Device Type** is *Distal embolic protection device*,

<table>
<thead>
<tr>
<th>EPD Type</th>
<th>□ Angioguard</th>
<th>□ Accunet</th>
<th>□ Emboshield</th>
<th>□ Firbernet</th>
<th>□ Filterwire</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□ Gore Embolic Filter</td>
<td>□ Guardwire</td>
<td>□ SpiderFX</td>
<td>□ IDE device</td>
<td>□ Other</td>
</tr>
</tbody>
</table>

If **Protection Device Type** is *Flow reversal*,

<table>
<thead>
<tr>
<th>Flow Reversal Type</th>
<th>□ Silk Road ENROUTE</th>
<th>□ Medtronic MoMa</th>
<th>□ IDE device</th>
<th>□ Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow Reversal Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If **Protection Device Used** is **NOT No**,

<table>
<thead>
<tr>
<th>Pre-dilate Before Protection Device</th>
<th>□ No</th>
<th>□ Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Failure</td>
<td>□ No</td>
<td>□ Yes, unable to access CCA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Yes, unable to cross lesion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>□ Yes, unable to deploy stent as intended</td>
</tr>
</tbody>
</table>

If **Technical Failure** is **No**,

<table>
<thead>
<tr>
<th>Number of Stents</th>
<th>□ 0</th>
<th>□ 1</th>
<th>□ 2</th>
</tr>
</thead>
</table>

If **Number of Stents** is **0**, 

<table>
<thead>
<tr>
<th>Balloon Diameter</th>
<th>mm</th>
</tr>
</thead>
</table>

If **Technical Failure** is **No** **and** **Number of Stents** is **1 or 2**, 

<table>
<thead>
<tr>
<th>Stent 1</th>
<th>Stent 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Number</td>
<td></td>
</tr>
<tr>
<td>Manufacturer</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td></td>
</tr>
<tr>
<td>Diameter</td>
<td>mm</td>
</tr>
<tr>
<td>Length</td>
<td>mm</td>
</tr>
<tr>
<td>Post Dilate</td>
<td>□ No</td>
</tr>
<tr>
<td>Balloon Diameter</td>
<td>mm</td>
</tr>
</tbody>
</table>

Please Specify Other Device(s):
Procedure Information

<table>
<thead>
<tr>
<th>Neurologic Change</th>
<th>□ No</th>
<th>□ Decreased LOC</th>
<th>□ Seizure</th>
<th>□ Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>If Neurologic Change is NOT No,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suspected Etiology</td>
<td>□ Unknown</td>
<td>□ Distal Emboli</td>
<td>□ Thrombosis</td>
<td>□ Flow Reversal</td>
</tr>
<tr>
<td>Intra-cranial Completion Angiogram</td>
<td>□ No</td>
<td>□ Yes, without new occlusions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>□ Yes, branch occlusion seen</td>
<td>□ Yes, branch occlusion treated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thank you!