HYPERCOAGULABLE SCREEN:

When would this test be ordered?
- Screening for a hypercoagulable state is reserved for:
  - Young patients (<50) with no identified etiology of their stroke after diagnostic testing
  - Patients with prior venous thrombosis, especially in an unusual location and those with a family history of thrombosis

What tests would be ordered for a Hypercoagulable Screen?
**This work-up should be considered only for patients with ischemic stroke where no other etiology can be found. Even then, the yield is likely low for finding any abnormality. EXCEPTION: infarct due to cerebral venous thrombosis increases yield of abnormal coagulation.**

<table>
<thead>
<tr>
<th>TEST</th>
<th>COMMENTS</th>
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<tbody>
<tr>
<td>INR/aPTT</td>
<td>Elevated aPTT and normal INR can be seen when lupus anticoagulant is present. If aPTT is prolonged and a subsequent &quot;mixing&quot; study (completed in Owen Sound Lab) fails to correct the prolonged aPTT, please see Lupus Anticoagulant section.</td>
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<tr>
<td>Protein C and Protein S Deficiencies</td>
<td>Can be inherited or acquired disorders, therefore accurate family history is very important. Most commonly seen with cerebral venous infarction, but may also occur with TIAs, amaurosis fugax, and arterial strokes. Caution: levels may be decreased to a variety of causes including pregnancy, oral contraceptives, DIC, hemodialysis, plasmaphoresis…Cannot be accurately determined while on Coumadin**.</td>
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<tr>
<td>Anti-thrombin III deficiency</td>
<td>Can be inherited or acquired disorders, therefore accurate family history is very important. Most commonly seen with cerebral venous infarction, but may also occur with TIAs, amaurosis fugax, and arterial strokes. Caution: levels may be decreased to a variety of causes including pregnancy, oral contraceptives, DIC, hemodialysis, plasmaphoresis…Cannot be accurately determined while on heparin.</td>
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<tr>
<td>Activated Protein C Resistance (APCR)</td>
<td>Commonly due to inherited mutation of Factor V Leiden (95% of patients). One of the most common causes of DVT. Most valuable initial test. Most common single cause of an hypercoagulable state. Cannot be accurately determined while on anticoagulants**.</td>
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</tbody>
</table>

**Patient should be off coumadin for two weeks prior to testing**
Factor V Leiden
Genetic test that complements APCR and is **only done when the APCR is abnormal**. Single most common inherited thrombophilic defect. Found in 10-15% of patients with cerebral sinus thrombosis (CVT). Concomitant use of oral contraceptives may significantly increase the risk of CVT in patients with coagulation disorders. **May be tested while on anticoagulants.**

Anti-phospholipid antibodies
Lupus anticoagulant
Anti-cardiolipin antibodies
Consider these tests when the aPTT is prolonged and a subsequent "mixing" study fails to correct the prolonged aPTT result (mixing study completed in Owen Sound Lab). Can be inherited or acquired (drugs, malignancy, infections) disorders. If appropriate, all three disorders should be tested, as not all patients with Lupus Anti-coag have anti-cardiolipin antibodies and vice versa.

Homocysteine level
Appears to be one of the few markers associated with increased risk of both arterial and venous thrombosis. Amino acid that is produced in the body and my lead to atherosclerosis. High levels can cause cholesterol to change to LDL and make blood clot more easily. ~20% of people with heart disease have high homosysteine levels. High levels most commonly caused by poor diet, requiring vitamin supplement of B₆, B₁₂ and folic acid. Recheck levels at 8 weeks of vitamin supplement therapy.

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**Patient should be off coumadin for two weeks prior to testing**

Source: Bushnell, Cheryl D., Goldstein, Larry B. *Diagnostic testing for Coagulopathies in Patients with Ischemic Stroke*. Stroke December 2000


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