Effective treatment for acute stroke now exists and is presently available in most major Canadian centres and outlying regions. In addition, the focus of acute stroke care is now expanding to include the expedient investigation for transient ischemic attacks (TIAs). However, the majority of stroke care will still depend on effective primary and secondary prevention strategies which primarily target the control of hypertension.

Acutestroke Canada supports a network of institutions presently using thrombolytic therapy for acute ischemic stroke with proven success and limited complications. While it may appear that this is a recent advance, tissue plasminogen activator (tPA) was first shown to be effective for stroke in 1995.2

Stroke warning signs are given in Table 1. Physicians should instruct patients to call 911 when these signs are noted. Time saved in appropriate transfer to the ER is critical.

Acute stroke treatment generally involves the IV administration of tPA in under three hours from stroke onset. If the time of stroke onset is not known, the time when the patient was last seen as being well is used. It is worthwhile learning what acute treatment options are available in your region, as in select cases, treatment might be offered for up to six hours after the event, possibly helping people in more remote areas. All stroke patients should have a CT scan prior to treatment as there is no reliable way to tell clinically whether the underlying lesion is due to ischemia or to hemorrhage.

TIAs

TIAs should be investigated urgently. The expediency is justified as the risk of stroke at 90 days after TIA is approximately 10%. In addition, about half of this risk occurs in the first two days.3 The most important tests to consider urgently are a carotid Doppler and ECG which provide initial screening for carotid stenosis and atrial fibrillation. A CT scan of the brain is also required in order to rule out lesions that can mimic TIAs, such as a seizure from a tumour.

It is generally difficult to arrange for timely investigations. Triage algorithms for TIA patients have been developed and validated, including the ABCD² score (Table 2). Scores of zero to three...
indicate a low-risk of stroke (1% in two days). Moderate risk involves scores of four to five (4.1% in two days) and high-risk for scores $\geq 6$ (8.1% in two days).4

Risk is not confined to these factors, but do take note of the common features that contribute to higher risk, including:

- elevated BP,
- diabetes and
- clinical deficits of weakness or speech disturbance.

It is equally important to note that isolated sensory symptoms and transient vertigo are not considered high-risk. In many centres, acute stroke/TIA referral clinics may also be available for assistance.

**Hemorrhagic stroke**

Headaches that are worrisome for subarachnoid hemorrhage generally involve a “thunderclap” onset. They should be maximal in intensity at the time of onset. Such headaches should be referred to the ED or a neurologist for expedient cerebral imaging and a possible lumbar puncture.

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**FAQ**

**What headache patterns are worrisome for stroke?**

Severe headaches that are of maximal intensity at the time of onset may indicate a subarachnoid hemorrhage.

Any individual with a headache and a neurological deficit should have expedient cerebral imaging to look for intracranial hemorrhage.

**FAQ**

**What tests should I order first after a transient ischemic attack (TIA)?**

- CT scan of head
- Carotid Doppler
- ECG

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**Table 1**

**Major stroke warning signs**

1. **Weakness**
   - Generally lateralized
2. **Loss of vision**
   - Monocular or hemianopsia
3. **Vertigo**
   - When accompanied by another neurological deficit
4. **Loss of speech**
   - Aphasia or dysarthria
5. **Sudden onset headache**

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**Table 2**

**ABCD² score**

<table>
<thead>
<tr>
<th></th>
<th>ABCD² Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age: &gt; 65 years</td>
<td>1</td>
</tr>
<tr>
<td>BP &gt; 140/90 mmHg</td>
<td>1</td>
</tr>
<tr>
<td>Clinical deficit:</td>
<td></td>
</tr>
<tr>
<td>• Weakness</td>
<td>2</td>
</tr>
<tr>
<td>• Speech disturbance</td>
<td>1</td>
</tr>
<tr>
<td>Duration:</td>
<td></td>
</tr>
<tr>
<td>• &gt; 10 minutes</td>
<td>1</td>
</tr>
<tr>
<td>• 10 to 59 minutes</td>
<td>2</td>
</tr>
<tr>
<td>Diabetes</td>
<td>1</td>
</tr>
</tbody>
</table>

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“Silent” strokes

The presentation of “silent” strokes may really be dementia or cognitive change. Infarcts with no clinical correlation can also be detected on imaging tests. These situations should prompt tight control of vascular risk factors including:
• BP,
• diabetes and
• cholesterol.

Even the pathophysiology behind Alzheimer’s disease is showing increasing importance of stroke as a factor, so when there is a lack of motivation to prevent stroke, explain that the same measures will prevent dementia—this is often more successful.

Hypertension means stroke

The risk factors for stroke generally mirror those for other vascular conditions, such as coronary artery disease. However, hypertension is clearly the most significant risk factor for stroke and a hypertensive patient should be considered as a “presentation” of stroke. Exact agents to use are in somewhat of dispute, but there is a consensus that hypertensive treatment significantly lowers stroke risk. It is recommended that the targets set out by the Canadian Hypertension Education Program be used. It may be useful to explain to patients that a reduction in BP of 10/5 mmHg will lead to an approximate 30% risk reduction in stroke.

References