IN BRIEF A Summary of the Evidence

Monitoring for Atrial Fibrillation After Stroke or Transient Ischemic Attack

Key Messages

- Monitor patients who have been discharged from hospital after a stroke or transient ischemic attack (TIA) continuously for seven days with a Holter monitor or external loop recorder (ELR).
- Monitoring patients after discharge if they have already undergone continuous cardiac monitoring in hospital will likely not be cost-effective, because the cost of testing will increase but the number of additional patients diagnosed with atrial fibrillation (AF) will be small.

Context:

AF, a type of irregular heartbeat, increases the risk of TIA and stroke. When the heart doesn’t beat regularly, blood can pool, leading to the formation of clots. These clots can enter the bloodstream and get stuck in an artery of the brain, causing an ischemic stroke or TIA. Patients with AF have a stroke risk of 4.5% per year, but medication that helps to prevent clots, called anticoagulation therapy, can reduce this risk to 1.4%. Roughly 30% to 40% of first-time ischemic strokes are due to an unknown cause, and are referred to as an embolic stroke of undetermined source (ESUS). Patients who have experienced ESUS may have undiagnosed, or occult, AF.

Issue:

Determining whether patients who have experienced a stroke or TIA have AF can be important to help prevent future strokes or TIAs, but diagnosing AF isn’t always easy. Often patients with AF will not have symptoms and they may have episodes of AF that alternate with a regular heartbeat, making it difficult to catch. Long-term electrocardiography (ECG) monitoring using outpatient cardiac monitoring devices can help to identify occult AF that is undetectable by other means; however, the use of these devices varies across Canada. The CADTH Optimal Use project will help to guide clinical and policy decisions about the use of these monitoring devices in patients who have experienced a stroke or TIA.

Technology:

Outpatient cardiac monitoring devices for outpatient continuous cardiac monitoring include ambulatory Holter monitors, ELRs, implantable loop recorders (ILRs), and mobile cardiac outpatient telemetry (MCOT) devices. Ambulatory Holter monitors typically have three to eight leads connected to a patient’s chest, and a small monitor that is carried in a pouch around their neck or waist. Data from the monitor’s continuous recording are stored, then transmitted via the Internet. ELRs use chest electrodes or a wristband to continuously monitor cardiac activity. The data are transmitted to a physician or data centre via telephone. ILRs operate similarly to ELRs, but are implanted beneath the skin through a small incision and can remain there for up to three years. MCOT devices use three or four electrodes to monitor cardiac activity. The data are sent to the patient’s cellphone, then sent in real time to a data centre.

Methods:

CADTH conducted a health technology assessment (HTA) on the clinical effectiveness and cost-effectiveness of cardiac monitoring devices in patients discharged from hospital following a stroke or TIA. Patient perspectives and experiences regarding the value and impact of outpatient AF cardiac monitoring devices were also considered. The Health Technology Expert Review Panel developed recommendations on the appropriate use of outpatient cardiac monitoring devices based on the evidence presented in the HTA report.

Results:

The systematic review of the clinical effectiveness literature assessed the proportion of post-stroke and/or TIA patients diagnosed with AF by four different outpatient cardiac monitoring devices in 36 studies. Individual study results were presented and synthesized narratively. In general, the results showed that there was a substantial increase in diagnostic yield of AF when monitoring for longer than 24 hours. Longer duration of monitoring appears to result in a greater likelihood of detecting AF. Monitoring patients beyond 30 days demonstrated greater diagnostic yield compared with less than 30 days, but improvements were modest. Data on MCOT were limited to one
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A pilot randomized controlled trial study that showed no difference in AF detection compared with no monitoring.

Cardiac monitoring after stroke or TIA for the investigation of AF can be cost-effective. The incremental cost-effectiveness ratio (ICER) of seven-day cardiac monitoring compared with standard practice (in which 60% of patients received 24 hours of Holter monitoring) in patients with a very recent history of stroke or TIA who did not receive in-hospital continuous monitoring (patients who received ECG only) was between $50,000 and $80,000 per quality-adjusted life-year (QALY) gained. Targeting monitoring to relatively healthy post-stroke patients and those with a higher suspected likelihood of AF further improves the cost-effectiveness. Longer-term monitoring, such as 30-day ELR or ILR, had ICERs greater than $85,000 per QALY gained, and are therefore unlikely to be cost-effective. The economic findings were based on three separate analyses.

A review of nine studies that included data regarding patient perspectives and experiences suggests that most patients perceive outpatient cardiac monitoring devices to be comfortable and easy to use, and satisfaction with outpatient cardiac monitoring is high.

Read more about CADTH and its review of monitoring for atrial fibrillation after stroke or TIA at:

cadth.ca/monitoring-atrial-fibrillation-discharged-stroke-and-transient-ischemic-attack-patients-0

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