

# Technologies for Remote Consultations in the Diagnosis of Stroke: A Review

### Context

Strokes are the third most common cause of death in Canada. Most strokes are ischemic, caused by a lack of blood flow to the brain, often due to a blood clot. In these cases, rapid diagnosis is needed because it is important to administer thrombolytic (“clot-busting”) drugs within three hours of symptom onset.

### Technology

Telemedicine generally refers to two-way videoconferencing or a combination of telephone and image transfer, in which physicians in rural or remote areas communicate with experts at a major centre. Experts provide guidance throughout the clinical consultation and treatment decision-making process. Access to imaging may be through a secure website, Digital Imaging and Communications in Medicine (DICOM) viewer, or email transfer.

Telephone communication is defined as the use of oral communication only. Laboratory results may be communicated verbally, but imaging results are not available to the expert consultant.

### Issue

As most stroke experts are located in major centres, patients in rural or remote areas are less likely to receive thrombolytic drugs unless remote physicians can consult the experts in a timely manner. A review of the clinical evidence will help inform decisions about the use of telemedicine.

### Methods

A limited literature search was conducted of key resources, and titles and abstracts of the retrieved publications were reviewed. Full-text publications were evaluated for final article selection according to predetermined selection criteria (population, intervention, comparator, outcomes, and study designs).

### Key Messages

- Telemedicine is likely a legitimate option to guide treatment decisions related to ischemic stroke, including the administration of thrombolytic drugs, without compromising patient safety.
- Telemedicine technologies that allow for image transfer may improve diagnostic accuracy as compared with technologies that do not.
- Results should be interpreted with caution as most data are from non-randomized or non-blinded studies.

### Results

The literature search identified 316 citations, with 1 additional article identified from other sources. After screening the abstracts, 40 were deemed potentially relevant and 17 met the criteria for inclusion in this review — 1 health technology assessment, 1 systematic review, 1 randomized controlled trial, and 14 non-randomized studies.

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