Complete Summary

GUIDELINE TITLE

Stroke and transient ischaemic attacks: assessment, investigation, immediate management and secondary prevention.

BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Stroke and transient ischaemic attacks: assessment, investigation, immediate management and secondary prevention. Singapore: Singapore Ministry of Health; 2003 Mar. 44 p. [49 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Transient ischaemic attack (TIA) or acute stroke (other than a subarachnoid haemorrhage)

GUIDELINE CATEGORY

Evaluation
Management
Prevention
Rehabilitation
Risk Assessment
Treatment

CLINICAL SPECIALTY

Critical Care
Emergency Medicine

Family Practice
Geriatrics
Neurological Surgery
Neurology
Nursing
Physical Medicine and Rehabilitation
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Dietitians
Health Care Providers
Hospitals
Nurses
Occupational Therapists
Physical Therapists
Physician Assistants
Physicians
Social Workers

GUIDELINE OBJECTIVE(S)

- To update the 1999 guidelines of the Stroke Subcommittee of the National Committee on Neuroscience for the management of stroke
- To address the assessment, investigation, immediate management, and strategies for secondary prevention of stroke
- To make recommendations which involve the clinical practice of medical, nursing, and paramedical staff
- To assist individual clinicians, hospital departments, and hospital administrators in producing local protocols and to suggest methods for implementation and for clinical audit

TARGET POPULATION

Adults in Singapore with stroke or transient ischaemic attack or with risk of stroke

This guideline does not include patients with subarachnoid haemorrhage or young people with stroke.

INTERVENTIONS AND PRACTICES CONSIDERED

Evaluation

1. Medical assessment, including history and physical examination
2. Multidisciplinary assessment as needed
3. Swallowing assessment
4. Neuroimaging, including computed tomography (CT) and magnetic resonance imaging (MRI) brain scans

5. Other tests, including electrocardiogram (ECG), chest x-ray, full blood count, serum urea and electrolytes, blood glucose, and lipids
6. Additional investigations, as indicated, including carotid Doppler ultrasonography, echocardiography, other haematological investigations

Management/Treatment/Prevention/Rehabilitation

Service Delivery

1. Multidisciplinary stroke service based in designated stroke units
2. Referral to specialist assessment clinics for those not requiring hospital admission

Immediate Management

1. Antiplatelet therapy, normally aspirin
2. Urgent neurosurgical assessment for selected patients
3. Urgent correction of coagulation defects in selected patients: discontinuation of thrombolytics, anti-platelet therapy, and anticoagulants
4. Measures to combat fever in acute stroke patients
5. Investigation for possible sources of infection in patients with fever and treatment with early antibiotic therapy if appropriate
6. Glycemic control in acute stroke patients
7. Measures to prevent complications after acute stroke, such as infections, decubitus ulcers, deep venous thrombosis, and depression

The following measures were considered for immediate management but <u>not</u> recommended:

1. The routine use of drugs to limit neural damage, including the administration of corticosteroids, neuroprotectants, plasma volume expanders, barbiturates, and streptokinase
2. Lowering of mild and moderately elevated blood pressure in the acute phase of stroke

Secondary Prevention

1. Long-term antiplatelet therapy (aspirin, ticlopidine, clopidogrel, dipyridamole) in selected patients
2. Warfarin in selected patients
3. Carotid endarterectomy in selected patients
4. Measures to lower blood pressure and cholesterol in selected patients after the acute phase of stroke
5. Measures to control risk factors (e.g., diabetes mellitus and cigarette smoking) after stabilization of initial event

Rehabilitation

1. Assessment for rehabilitation potential
2. Rehabilitation therapy as the patient's condition permits in stroke rehabilitation unit or generic rehabilitation ward

MAJOR OUTCOMES CONSIDERED

- Reliability and utility of diagnostic assessments for stroke
- Incidence of stroke
- Effectiveness of prevention strategies in the secondary prevention of stroke
- Effectiveness of treatment strategies for stroke on physical and functional outcomes, morbidity, mortality, and disability
- Risk reduction for vascular events following stroke

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guidelines are based on the Scottish Intercollegiate Guidelines Network's Clinical Practice Guidelines on the Management of Patients with Stroke, which were reviewed and modified to meet local needs. New information in recent publications that impact on patients' care were also reviewed and included.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level Ia: Evidence obtained from meta-analysis of randomised controlled trials.

Level Ib: Evidence obtained from at least one randomised controlled trial.

Level IIa: Evidence obtained from at least one well-designed controlled study without randomisation.

Level IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study.

Level III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies.

Level IV: Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendations

Grade A (evidence levels Ia, Ib): Requires at least one randomised controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.

Grade B (evidence levels IIa, IIb, III): Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation.

Grade C (evidence level IV): Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Not stated

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The recommendations that follow are those from the guideline's executive summary; detailed recommendations can be found in the original guideline document. Each recommendation is rated based on the level of the evidence and the grades of recommendation. Definitions of the grades of the recommendations (A, B, C, Good Practice Points) and level of the evidence (Level I-Level IV) are presented at the end of the Major Recommendations field.

Service Delivery

A - Acute inpatient care for patients admitted to hospital with a stroke should be organised as a multidisciplinary stroke service based in designated stroke units. (Grade A, Level Ia)

C - Hospitals and general practitioners should agree on a local admissions policy and a local protocol for referral to specialist assessment clinics for those not requiring hospital admission. (Grade C, Level IV)

Assessment and Investigation

C - A full medical assessment should be undertaken and multidisciplinary assessment considered for all patients with acute stroke or transient ischaemic attack (TIA) to define the nature of the event, the need for investigations, further management, and rehabilitation. (Grade C, Level IV)

C - Written local protocols should be available, setting out indications for both routine and more specialised investigations which the clinical situation may merit. (Grade C, Level IV)

C & GPP - All patients with acute stroke should undergo brain scanning (computed tomography [CT] or magnetic resonance imaging [MRI]) as soon as possible (Grade C, Level IV), preferably within 24 hours (GPP). A local protocol for more urgent scans should be made available. (GPP)

C - All patients with acute stroke or TIA should have the following investigations: electrocardiogram (ECG), chest x-ray, full blood count, serum urea and electrolytes, blood glucose, and lipids. (Grade C, Level IV)

B - A swallowing assessment should be undertaken at home or in hospital as part of the clinical assessment of stroke. (Grade B, Level III)

Immediate Management

A - The routine use of drugs to limit neural damage, including the administration of corticosteroids, neuroprotectants, plasma volume expanders, barbiturates, and streptokinase, is of no proven benefit and should be discouraged. (Grade A, Levels Ia & Ib)

A - Antiplatelet therapy, normally aspirin, should be prescribed immediately in patients who have sustained an ischaemic stroke. (Grade A, Levels Ia & Ib)

A - Mild and moderately elevated blood pressure should not routinely be lowered in the acute phase of stroke as this may worsen outcome. (Grade A, Level Ia)

C - Urgent neurosurgical assessment should be available for selected patients, such as those with large cerebellar infarcts or haemorrhage or acute hydrocephalus, and for selected cases of cerebral haemorrhage. (Grade C, Level IV)

C - Patients receiving anticoagulants or recent thrombolytic therapy or those with bleeding diastheses require urgent correction of coagulation defects. Thrombolytics, anti- platelet therapy, and anticoagulants should be discontinued. (Grade C, Level IV)

C - Measures should be taken to combat fever in acute stroke patients. Stroke patients with fever should be fully investigated for possible sources of infection and started on early antibiotic therapy if appropriate. (Grade C, Level IV)

C - Reasonable glycemic control should be maintained in all acute stroke patients. (Grade C, Level IV)

C - Measures should be instituted to prevent complications after acute stroke, such as infections, decubitus ulcers, deep venous thrombosis, and depression. (Grade C, Level IV)

Secondary Prevention

A - Antiplatelet therapy should be continued on the long term for the secondary prevention of recurrent stroke and other vascular events in patients who have sustained an ischaemic cerebrovascular event. (Grade A, Levels Ia & Ib)

A - Warfarin should be considered for use in stroke and TIA patients with non-valvular atrial fibrillation. (Grade A, Level Ia)

C - Warfarin should also be considered after cardioembolic stroke or TIA from valvular heart disease and recent myocardial infarction. (Grade C, Level IV)

A – Patients with moderate or severe internal carotid artery ipsilateral to a carotid TIA or non-disabling ischaemic stroke should be considered for carotid endarterectomy by an experienced surgeon. (Grade A, Level Ia & 1b)

A - Blood pressure lowering should be considered for patients after the acute phase of stroke. (Grade A, Level Ia)

A - Cholesterol lowering should be considered for patients after the acute phase of stroke. (Grade A, Level Ib)

C - The control of risk factors such as diabetes mellitus and cigarette smoking should be initiated once the initial event has stabilised. (Grade C, Level IV)

Rehabilitation

A - All stroke patients should be assessed for rehabilitation potential, and rehabilitation therapy started as soon as the patient's condition permits. (Grade A, Level Ib)

A - Stroke patients should be rehabilitated in a stroke rehabilitation unit. Where this is not available, rehabilitation should be provided in a generic rehabilitation ward. (Grade A, Level Ia)

Definitions:

Grades of Recommendations

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Grade C (evidence level IV): Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group.

Levels of Evidence

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Level IV: Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

CLINICAL ALGORITHM(S)

An algorithm is provided for the management of suspected stroke/transient ischaemic attack (TIA).

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Overall Benefits

Guideline implementation is intended to:

- Reduce the incidence of stroke
- Reduce case fatality after a stroke has occurred
- Reduce the risk of further vascular events
- Reduce the level of disability due to stroke

Specific Benefits

- There is conclusive evidence for the efficacy of antiplatelet and anticoagulant agents in the secondary prevention of ischaemic stroke.
- Early initiation of aspirin (within 48 hours) after ischaemic stroke reduces stroke recurrence at 14 days. It also improves outcomes, with fewer in-hospital deaths and non-fatal strokes at 4 weeks and fewer dead or dependant patients at 6 months.
- Long-term antiplatelet therapy reduces the risk of serious vascular events (recurrent stroke, myocardial infarction, or vascular death) following an ischaemic stroke or transient ischaemic attack (TIA) by 22%; 36 serious vascular events will be avoided over two years per 1000 patients with previous stroke or transient ischaemic attack.
- Warfarin reduces the relative risk of a further ischaemic stroke in patients with atrial fibrillation to the same extent as its primary preventive action in atrial fibrillation. However, the reduction in absolute risk is higher. The risk of recurrent stroke following a TIA or minor non-disabling stroke is reduced by approximately two-thirds.
- The role of carotid endarterectomy (CEA) was studied in 3 large randomised controlled trials. When combined with aspirin, CEA has been found to be effective in reducing the risk of recurrent stroke, compared to taking aspirin alone, in patients with 70 to 99% (North American Symptomatic Carotid Endarterectomy Trial [NASCET]-measured) internal carotid stenosis ipsilateral to a carotid territory TIA or non-disabling ischaemic stroke. CEA may also benefit selected high-risk patients with symptomatic 50 to 69% (NASCET-measured) stenosis. The benefit seen with CEA among patients with symptomatic stenosis is generalisable only to surgically fit patients operated on by surgeons with acceptable complication rates.
- Blood pressure reduction commencing beyond the acute phase results in a further reduction of vascular events. The benefit is seen in both ischaemic and haemorrhagic stroke, in both hypertensive and non-hypertensive subjects.

- Statins have been shown to reduce the occurrence of vascular events among high risk patients, including those with cerebrovascular disorders.
- A meta-analysis of trials comparing the management of patients with acute stroke in specialised units and in general medical units has shown that the management of patients with stroke in a stroke unit is associated with a reduction in death, dead or disability, and death or institutionalisation. More patients managed in stroke units are discharged home and remain at home. Benefits occur by reducing death from secondary complications of stroke and reducing the need for institutional care through a reduction in disability.
- Evidence from clinical trials suggests that early rehabilitation intervention leads to improved physical and functional outcomes after stroke.
- A meta-analysis has shown that patients managed in a stroke rehabilitation unit had better outcomes than patients managed in a mixed rehabilitation unit. Patients managed in a mixed rehabilitation ward had better outcomes than patients managed in a general medical ward.

POTENTIAL HARMS

- There is a risk of haemorrhagic transformation with the use of anticoagulant therapy after stroke.
- Carotid endarterectomy carries the risk of complications.

CONTRAINDICATIONS

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The use of streptokinase in the acute management of stroke is contraindicated in view of its lack of beneficial effect on mortality and morbidity. The management of patients with acute ischaemic stroke using thrombolytic therapy carries the risk of catastrophic intracerebral haemorrhage; there is difficulty in predicting who might benefit or be at most risk of haemorrhage. Thrombolysis should not yet be regarded as routine therapy.

QUALIFYING STATEMENTS

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- These guidelines are not intended to serve as standards of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.
- The contents of the guideline document are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care. Each physician is ultimately responsible for the management of his/her unique patient in the light of the clinical data presented by the patient and the diagnostic and treatment options available.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Clinical Audit

Hospital managers and professional directors should consider these guidelines in audit planning, especially in units where a large number of acute patients are admitted (e.g., general medical and geriatric units). Primary care practitioners should also consider the implications of these guidelines for clinical audit and the potential for audit at the interface between primary and secondary care.

Audit of Key Outcome Indicators

Key outcome indicators are listed in Annex 1 of the original guideline document. The desired outcomes of clinical assessment, investigation, and immediate management are accuracy of diagnosis, identification of care needs in disabling strokes, and the provision of supportive care. Audit of individual episodes of care will ascertain if these goals have been met.

Particular attention should be paid to accuracy of diagnosis. Appropriate secondary prevention is dependent on an accurate diagnosis. This can best be judged in audit of individual episodes of care and a retrospective review of cases when new stroke or transient ischaemic attack (TIA) events occur. The key outcome indicator is reduction of stroke events and deaths, which can only be judged at a population level, i.e., from epidemiological data.

Audit of Process

Audit of process at ward level is strongly recommended. The minimum provisions and clinical core dataset required for audit of process are listed in Annex 2 of the original guideline. It will be advantageous to establish current baseline practice against which change may be measured.

Quality Assurance and Continuous Quality Improvement

Hospital managers and clinical directors, involving their hospital audit committees as appropriate, should ensure that performance is satisfactory with regard to providing appropriate care for the stroke patient in terms of clinical assessment and investigation, and introducing secondary prevention in appropriate patients.

Implementation of Guidelines

Stroke patients should be managed in stroke units. It is expected that these guidelines will be adopted after discussion involving clinical staff and hospital authorities. Providers should consider how best to implement these guidelines and audit their use. One commonly used method is the development of stroke carepaths. Local protocols should be discussed with and circulated to all relevant staff.

Continuing Education

Continuing education of relevant staff (medical, nursing, paramedical, pharmaceutical) at hospital, unit, and general medical practice levels should be conducted through lectures, tutorials, and policy reviews.

Hospitals and units may wish to appoint a staff member to coordinate this activity, which may be most appropriately delivered by the multidisciplinary stroke team.

Funding

Adequate funding/subsidy is required for effective and appropriate care to be given to all stroke and TIA patients.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Stroke and transient ischaemic attacks: assessment, investigation, immediate management and secondary prevention. Singapore: Singapore Ministry of Health; 2003 Mar. 44 p. [49 references]

ADAPTATION

The guidelines are based on the Scottish Intercollegiate Guidelines Network´s Clinical Practice Guidelines on the Management of Patients with Stroke, which were reviewed and modified to meet local needs.

DATE RELEASED

2003 Mar

GUIDELINE DEVELOPER(S)

Singapore Ministry of Health - National Government Agency [Non-U.S.]

SOURCE(S) OF FUNDING

Singapore Ministry of Health

GUIDELINE COMMITTEE

Workgroup on Stroke and Transient Ischaemic Attacks

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Singapore Ministry of Health Web site.

Print copies: Available from the Singapore Ministry of Health, College of Medicine Building, Mezzanine Floor 16 College Rd, Singapore 169854.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on November 28, 2003.

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