

Basic Care Manual

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What was Basic Care Manual made for?

- to **assist** the **implementation** of the ESO Action Plan for Stroke in Europe (SAP-E) by
- **providing** a simple overview of **evidence-based care and treatment** to
- highlight the **essential steps defining good basic stroke care** in the **chain of care** from the pre-hospital setting to life after stroke

Basic Care Manual



What it is not

- This is **not a guideline** according to the ESO standard procedure on preparation of guidelines or a replacement for local detailed guidelines

Basic Care Manual - Method



How was this Basic Care Manual prepared?

- Prepared by a **sub-committee established by the ESO Guideline Board** by request from the Stroke Action Plan Europe Implementation Steering Committee:
 - Steiner T, Turc G, Dawson J, Sunnerhagen KS, Christensen H
- Recommendations from high-quality guidelines translated into a practical list of what to do and what not to do:
 - ESO guidelines wherever existing
 - If there were no ESO guideline, GRADE-based guideline were preferred
 - If there were no GRADE-based guideline, best existing guideline based on consensus
- Approval of the final document by
 - Implementations Steering Committee of SAP-E
 - ESO Guideline Board
 - ESO Executive Committee

Basic Care Manual - Method



What is covered by this Basics of stroke Care?

Chain of care from the pre-hospital phase to life after stroke

How where recommendations graded?

We pragmatically harmonized gradings into „must do“, „consider doing“ and „don't do“

Inform the reader on the quality and type of source:

- EBR: evidence-based recommendation
- SR: systematic review
- MA: meta-analysis
- RCT: randomized controlled trial
- CS: consensus statement
- RA: research article

Overview of covered aspects



- Pre-hospital management
- On arrival with suspected stroke
- Acute reperfusion treatment
- Initiate acute pharmacological therapy
- Acute stroke unit care
- Stroke unit rehabilitation and care/early supported discharge
- Prevention of complications
- Further work up during stroke unit stay
- Pharmacological secondary prevention
- Carotid artery disease
- Non-pharmacological secondary prevention – life-style modifications
- After discharge
- Life after Stroke

Pre-hospital management



Must do	Source	Type of source
Educational campaigns to increase the awareness of immediately calling EMS for people with suspected stroke	[4]	EBR
EMS technicians and paramedics should be trained in a simple pre-hospital stroke scale to identify potential stroke patients.	[4]	EBR
EMS should implement a ‘ code-stroke ’ protocol including highest priority dispatch, pre-hospital notification and rapid transfer to closest ‘stroke ready’ hospital	[4]	EBR
Don't do		
<i>Routine</i> use of <i>O2</i> ; only use if SpO ₂ <95%	[4]	EBR
Pre-hospital administration of <i>insulin</i>	[4]	EBR
Pre-hospital induction of <i>hypothermia</i>	[4]	EBR

On arrival with suspected stroke



Must do	Source	Type of source
Patients should be admitted to a hospital with a defined rapid pathway for acute stroke and staff with expertise in acute stroke	[5]	EBR
Patients should have a swift but careful clinical assessment , including neurological examination; use a stroke severity rating , e.g. NIHSS	[5]	EBR
Immediate brain imaging with non-contrast CCT or cMRI (DWI, T2*/SWI, FLAIR)	[6]	EBR
CT or MR angiography should be performed in all arriving within 6 hours or potentially eligible for thrombectomy.	[7]	EBR
In patients arriving with unknown time of onset within 6 – 24 hours and potentially eligible for IVT or EVT , MRI with MRA and MRP or CT with CTA and CTP should be performed.	[7]	EBR
Acute blood work-up including - aPTT, INR, electrolytes, creatinine/eGFR, complete blood count - and ECG , but should not delay reperfusion therapy	[8]	EBR
Consider doing		
MRI with DWI, FLAIR, T2*/SWI and TOF +/- CE-MRA of cervical arteries in patients with TIA after specialist assessment	[9]	EBR

5: Powers WJ, Rabinstein AA, Ackerson T, et al. Guidelines for the Early Management of Patients With Acute Ischemic Stroke: 2019 Stroke 2019;50:e344-e418

6: Expert Panel on Neurologic I, Salmela MB et al. ACR Appropriateness Journal of the American College of Radiology : JACR 2017;14:S34-S61

7. Turc G et al. ESO Guidelines on Mechanical Thrombectomy in Acute Ischemic Stroke. European Stroke Journal 2019;4

8. ESO Guidelines for management of ischaemic stroke and transient ischaemic attack 2008. Cerebrovascular Disease 2008;25:457-507

9. Boulanger JM et al. Canadian Stroke Best Practice Recommendations for Acute Stroke Management: IJS 2018;13:949-984

Acute reperfusion treatment



Must do	Source	Type of source
Blood glucose must be measured before start of IVT	[9]	EBR
IVT with alteplase in potentially disabling stroke, also minor, within 4.5 hours of onset, irrespective of age; unless contraindications are present	[10]	
Reperfusion therapy (IVT and / or MT based on individual considerations) in basilar large vessel occlusion within 6 hours of onset.	[7,10]	EBR
Reperfusion therapy (IVT and/or MT) in selected patients in the late window with favorable imaging profiles, as detailed in specific guidelines	[7,10]	EBR

7. Turc G et al. ESO Guidelines on Mechanical Thrombectomy in Acute Ischemic Stroke. European Stroke Journal 2019;4

9. Boulanger JM et al. Canadian Stroke Best Practice Recommendations for Acute Stroke Management: IJS 2018;13:949-984

10. Berge E et al.. ESO guideline for intravenous thrombolytic treatment for acute ischaemic stroke. ESJ 2021

Initiate acute pharmacological therapy



Must do	Source	Type of source
Aspirin is given in ischaemic stroke on arrival after primary imaging in patients not receiving reperfusion therapy, usually 250-300 mg aspirin	[5]	EBR
Blood pressure should be kept <185/110 mmHg in the first 24 hours after IVT and MT by pharmacological and non-pharmacological interventions	[7,10]	EBR
ICH: In acute ICH, blood pressure should be lowered to a systolic blood pressure at or below 140 mmHg as fast as possible but not by more than 90 mmHg	[11]	EBR
In seizures within 7 days , give antiepileptic drugs for 3 months	[5]	EBR
In seizures occurring after day 7 , start long-term antiepileptic drugs	[5]	EBR
ICH: OAC-related ICH consider reversal therapy according to drug	[12]	EBR
Don't do		
<i>Blood pressure lowering</i> in patients with ischaemic stroke and not receiving reperfusion therapy unless blood pressure is very high (>220/120 mmHg) and blood pressure lowering is indicated for other reasons.	[5]	EBR
Systolic blood pressure should <i>not be reduced more than 90 mmHg in acute ICH</i> to prevent kidney injury	[13]	CS
Do not use <i>antiepileptic drugs for primary prevention of seizures</i>	[5]	EBR

5: Powers WJ, Rabinstein AA, Ackerson T, et al. Guidelines for the Early Management of Patients With Acute Ischemic Stroke: 2019 Stroke 2019;50:e344-e418

7. Turc G et al. ESO Guidelines on Mechanical Thrombectomy in Acute Ischemic Stroke. European Stroke Journal 2019;4

10. Berge E et al.. ESO guideline for intravenous thrombolytic treatment for acute ischaemic stroke. ESJ 2021

11. NICE. Stroke and transient ischaemic attack in over 16s: diagnosis and initial management. www.nice.org.uk/guidance/ng128, 2019

12. Christensen H et al. ESO Guideline on Reversal of Oral Anticoagulants in Acute Intracerebral Haemorrhage. Eur Stroke J 2019;4:294-306

Acute stroke unit care



Must do	Source	Type of source
Admit to stroke unit on arrival to hospital, the stroke unit is suitable for all types of stroke / TIA.	[9]	EBR
Swallowing screening must be done on admission and before the patients is given any oral food, fluid or medication. If swallowing problems are present, specialist (nurse, OT etc.) assessment is indicated preferably within 24 hours to decide if dietary modification or tube feeding is required, and initiate swallowing therapy.	[14]	EBR
Help the patient to sit out of bed, stand or walk if the overall clinical condition allows for mobilization within the first 24 hours	[15]	EBR
Initial screening and assessment by rehabilitation professionals (physiotherapy, occupational therapy, speech and language therapist) within 48 hours and using a standardized protocol	[15]	EBR
Don't do		
If help is needed to sit out of bed, stand or walk, do not offer high dose mobilization in the first 24 hours.	[11]	EBR

9. Boulanger JM et al. Canadian Stroke Best Practice Recommendations for Acute Stroke Management: IJS 2018;13:949-984

11. NICE. Stroke and transient ischaemic attack in over 16s: diagnosis and initial management. www.nice.org.uk/guidance/ng128, 2019

14. NICE. Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition. nice.org.uk/guidance/cg32, 2013

15. NICE. Rehabilitation after a stroke. nice.org.uk, 2013

Stroke unit rehabilitation and care/early supported discharge



Must do	Source	Type of source
All people who require inpatient rehabilitation following stroke should be admitted to a specialized stroke rehabilitation unit	[16]	EBR
On the stroke unit, there should be an multidisciplinary team consisting of professionals with stroke expertise including physicians, nurses, occupational therapists, physiotherapists, speech-language therapists, social workers, and clinical dietitians	[16]	EBR
Basic assessment components should include swallowing, mood and cognition, temperature, nutrition, bowel and bladder function, skin breakdown, mobility, functional assessment, discharge planning, venous thromboembolism prophylaxis	[16]	EBR
Involve patients and carers in the rehabilitation process , and provide education in stroke	[16]	EBR
The rehabilitation team follows best practices as defined by practice guidelines.	[16]	EBR
Early supported discharge (ESD) – if available - is beneficial for patients with mild to moderate stroke symptoms, who are medically stable, and have the resources for care and support at home. ESD is best provided by the team that provided the patient’s inpatient rehabilitation, and should be initiated within 3 days of discharge.	[16]	EBR
Don't do		
<i>Don't withhold stroke unit care from patients with uncertain rehabilitation potential.</i>	[17]	EBR

16. Lanctôt KL et al. Canadian Stroke Best Practice Recommendations: Mood, Cognition and Fatigue following Stroke, 6th edition update 2019. IJS 2019;1747493019847334-1747493019847334

17. Hebert D et al. Canadian stroke best practice recommendations: Stroke rehabilitation practice guidelines, update 2015. Int J Stroke 2016;11:459-484

Prevention of complications



Must do

Use thigh high, sequential **intermittent pneumatic compression** to prevent **DVT and PE** in immobilized patients for ischemic stroke and intracranial hemorrhage. **If IPC is not available**, use **LMWH** in prophylactic doses waiting until 48 hours after onset is usual practice.

Assess post-void residual volume by ultrasound and use intermittent catheterization to **prevent urinary tract infections**

Prevent delirium by structured observation, non-pharmacological interventions, and medically according to local practice in manifest delirium

Prevent falls according to usual practice

Don't do

Use of graduated compression *stockings*

Use of *unfractionated heparin*, *except* in patients with *severe renal failure*

Use of *indwelling catheters* due to risk of urinary tract infections and lower urinary tract syndrome

9. Boulanger JM et al. Canadian Stroke Best Practice Recommendations for Acute Stroke Management: IJS 2018;13:949-984

18. Steiner T et al. The European Stroke Organisation (ESO) guidelines. Int J Stroke 2014;9:838-839 - renewed 2021

19. NHS. Delirium: prevention, diagnosis and management. <https://www.nice.org.uk/guidance/cg103>, 2010

20. NHS. Falls in older people: assessing risk and prevention. <https://www.nice.org.uk/guidance/cg103>, 2013

21. Dennis M et al. ESO guidelines for prophylaxis for venous thromboembolism in immobile patients with acute ischaemic stroke. European Stroke Journal 2016;1:6-1

Further work up during stroke unit stay



Must do	Source	Type of source
Blood work-up: fasting plasma- glucose or HbA1C , lipid profile, liver status	[9]	EBR
Repeated blood pressure measurements , e.g. every 15 to 30 minutes depending on and until good quality of blood pressure control	[9]	EBR
Telemetry for 24 hours or more , also depending on clinical needs (blood pressure control, heart rhythm analyses, oxygen saturation)	[9]	EBR
Clinical assessment for structural heart disease (history, physical examination, auscultation)	[9]	EBR
Carotids for carotid artery stenosis (Doppler or angiography (CT/MRI))	[9]	EBR
Additional monitoring in patients with a suspected cardio-embolic mechanism who are potential candidates for OAC	[22]	EBR
Consider doing		
Echocardiography should be used whenever a potential cardiac etiology is suspected (medical history, embolic imaging (CT, MRI) aspect, ECG, etc.).	[23]	EBR
CT angiography for large vessel disease in aortic arch and intracerebral vessels	[9]	EBR

9. Boulanger JM et al. Canadian Stroke Best Practice Recommendations for Acute Stroke Management: IJS 2018;13:949-984

22. Kirchhof P, et al. ESC Task Force for the management of atrial fibrillation of the European Society of Cardiology Eur Heart J 2016

23. Pepi M et al. Recommendations for echocardiography use in the diagnosis and management of cardiac sources of embolism: European journal of echocardiography; 2010;11:461-476

Pharmacological secondary prevention



Must do	Source	Type of source
Provide personalized treatment for cardiovascular risk factors which includes both lifestyle and pharmacological approaches.	[24]	EBR
Approaches must consider the physical and cognitive disabilities after stroke and a person's capacity to understand and take medication.	[24]	EBR
Secondary prevention measures should be commenced as soon as possible and preferably within one week; antithrombotics within 24 hours	[24]	EBR
<i>Antihypertensives</i>		
The aim of blood pressure treatment is to achieve a clinic systolic blood pressure of below 130 mmHg on a consistent basis. A higher threshold may be justified in people with bilateral carotid artery disease , in the elderly or in people who are frail and with limited life expectancy.	[25]	EBR
Choice of antihypertensive agent will vary according to local practice. Compliance issues, pricing, number of daily doses and side effect profile should be taken into consideration.		GCP
Long-term treatment with a statin drug should be offered in people with ischaemic stroke unless contraindicated and if no other obvious reason (e.g. AFib) is identified as cause of stroke	[13]	CS
In people with ICH, statins can be given if another indication is present but are not routinely needed for ICH	[13]	CS

13. Ahmed N et al. Consensus statements and recommendations from the ESO-Karolinska Stroke Update Conference, Stockholm 11-13 November 2018. Eur Stroke J 2019;4:307-317

24. Intercollegiate Stroke Working Party National clinical guideline for stroke, Fifth Edition, Royal College of Physicians, London, 2016

25. Williams B et al. ESC/ESH Guidelines for the management of arterial hypertension. Eur Heart J 2018;39:3021-3104

Pharmacological secondary prevention



Must do	Source	Type of source
<i>Antithrombotics</i>		
In ischaemic stroke or TIA with no atrial fibrillation , give long-term antiplatelets unless contraindicated; choice of drug will vary with local practice.	[26]	EBR
In ischaemic stroke or TIA with atrial fibrillation , give long-term anticoagulants unless contraindicated. Choice of drug will vary with local practice but direct oral anticoagulants are safer than vitamin K antagonists.	[26]	EBR
Consider doing		
Ischemic stroke: Consider referral for closure of patent foramen ovale in patients up to 60 years and no alternative cause of stroke	[27]	EBR
Ischemic stroke: Consider referral for LAAO in atrial fibrillation with contraindications for anticoagulation	[28]	EBR
ICH related to oral anticoagulation therapy because of atrial fibrillation: include into a trial or consider to restart long-term oral anticoagulation therapy after individual consideration of risks and benefits	[13]	CS

26. Klijn CJ et al. ESO guideline Antithrombotic treatment for secondary prevention of stroke and other thromboembolic events in patients with stroke or transient ischemic attack and non-valvular atrial fibrillation. *Stroke*. 2014;45(12):e116-27.

27. Messe SR, et al. Practice advisory update summary: Patent foramen ovale and secondary stroke prevention: Report of the Guideline Subcommittee of the AAN. *Neurology* 2020

28. National Institute for Health and Care Excellence. Atrial fibrillation: management - Clinical guideline. www.nice.org.uk/guidance/cg180, 2014

Pharmacological secondary prevention



Don't do		
Do not give <i>antiplatelets</i> in <i>atrial fibrillation</i> unless on another indication	[29]	EBR
Do not bridge with <i>heparin</i> before initiating <i>anticoagulants</i>	[29]	EBR

Carotid artery disease



Must do	Source	Type of source
Unless frailty or comorbidity would obviously contraindicate interventions, work-up for carotid artery stenosis should be done (Doppler ultrasonography and/or CT-angiography or MRA) preferably within 48 hours of symptom onset	[30]	EBR
People with >50% NASCET symptomatic stenosis should be referred to a vascular surgeon immediately	[31]	MA
CEA or CAS should preferably be performed within 14 days of stroke onset unless contraindicated	[31]	MA
CEA is preferred to CAS in people > 70 years	[31]	MA

30. Naylor AR, Ricco JB, de Borst GJ, et al. Editor's Choice - Management of Atherosclerotic Carotid and Vertebral Artery Disease: 2017 Clinical Practice Guidelines of the European Society for Vascular Medicine. Eur J Vasc Endovasc Med 2017;30:1-16

31. Abbott AL, Paraskevas KI, Kakkos SK, et al. Systematic Review of Guidelines for the Management of Asymptomatic and Symptomatic Carotid Stenosis. Stroke 2015;46:3288-3301

Non-pharmacological secondary prevention – life-style modifications

Must do	Source	Type of source
Give advice to stop smoking and offer cessation support which may include pharmacotherapy	[32]	EBR
Give advice to limit alcohol intake to 14 units/week in men and 7 units/week in women, offer support	[32]	EBR
Give guidance on diet . This will vary according to local practice but may include: <ul style="list-style-type: none"> • eat five or more portions of fruit and vegetables per day • reduce and replace saturated fats in their diet with polyunsaturated or monounsaturated • reduce salt intake 	[32]	EBR
Exercise and physical activity should be encouraged taking into account the individual capabilities	[32]	EBR

32. Wein T, et al. Canadian stroke best practice recommendations: Secondary prevention of stroke, sixth edition practice guidelines, update 2017. Int J Stroke 2018;13:420-443

33. Philp I et al. Development of a poststroke checklist to standardize follow-up care for stroke survivors. J Stroke Cerebrovasc Dis 2013;22:e173-180

After discharge



Must do	Source	Type of source
Discharge must be planned involving patient and relatives to ensure needed care is provided and patients and carers informed on what minimum support to expect.	[16]	EBR
Blood pressure should be monitored regularly after discharge from hospital	[16]	EBR
Follow-up on pharmacological and non-pharmacological secondary prevention is planned, including use of a post-stroke check-list	[33,34]	RA

16. Lanctôt KL et al. Canadian Stroke Best Practice Recommendations: Mood, Cognition and Fatigue following Stroke, 6th edition update 2019. IJS 2019;1747493019847334-1747493019847334

33. Philp I et al. Development of a poststroke checklist to standardize follow-up care for stroke survivors. J Stroke Cerebrovasc Dis 2013;22:e173-180

34. Ward AB et al. Evaluation of the Post Stroke Checklist: a pilot study in the United Kingdom and Singapore. International Journal of Stroke 2014;9 Suppl A100:76-84

Life after Stroke



Aspect	Must do	Source	Type of source
Follow-up	Patients should be followed up after stroke for functional decline and new symptoms including pain, e.g. by use of the post-stroke check list , [35] and referred if relevant	[36]	EBR
Involvement, support and education of patients and relatives	Patients and relatives should be involved in making care plans and other planning or decisions for life after stroke and receive appropriate support and education	[36]	EBR
Driving	Assessment for driving ability should be performed according to local legislation	[36]	EBR
Participation (social, work, leisure-time activities)	Individual assessment should be performed, and referral and counseling provided when relevant	[36]	EBR
Relationships/sexuality	Education and counseling should be provided	[36]	EBR
Disability support	Care plans should be completed, and applications made in a timely manner	[36]	EBR
Advanced care planning	Advanced care planning should be made and periodically reviewed.	[36]	EBR
Transition to long-term care	Discharge summary and care plan should be present on admission to long term care In case of ongoing rehabilitation goals, there should be access to relevant rehabilitation services . In case of changes in status, there should be access to reevaluation and rehabilitation	[36]	EBR

Thank you

