

뇌졸중 후 위험인자의 치료방법과 관리



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Secondary prevention

- A** – Anti-aggregants (aspirin, clopidogrel, extended-release dipyridamole, ticlopidine) and anticoagulants (warfarin, dabigatran, apixaban, rivaroxaban)
- B** – Blood pressure–lowering medications
- C** – Cessation of cigarette smoking, cholesterol-lowering medications, carotid revascularization
- D** – Diet
- E** – Exercise

Hypertension

Guidelines for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
Guideline for Healthcare Professionals From the AHA/ASA

AHA/ASA Guideline

- Initiation of BP therapy is indicated for previously untreated patients with ischemic stroke or TIA who, after the first several days, have an established BP ≥ 140 mm Hg systolic or ≥ 90 mm Hg diastolic (Class I; Level of Evidence B). Initiation of therapy for patients with BP < 140 mm Hg systolic and < 90 mm Hg diastolic is of uncertain benefit (Class IIb; Level of Evidence C). (Revised recommendation)
- Resumption of BP therapy is indicated for previously treated patients with known hypertension for both prevention of recurrent stroke and prevention of other vascular events in those who have had an ischemic stroke or TIA and are beyond the first several days (Class I; Level of Evidence A). (Revised recommendation)
- Goals for target BP level or reduction from pretreatment baseline are uncertain and should be individualized, but it is reasonable to achieve a systolic pressure < 140 mm Hg and a diastolic pressure < 90 mm Hg (Class IIa; Level of Evidence B). For patients with a recent lacunar stroke, it might be reasonable to target an SBP of < 130 mm Hg (Class IIb; Level of Evidence B). (Revised recommendation)

Kernan WN et al. 2014 AHA/ASA guideline

Hypertension

Guidelines for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
Guideline for Healthcare Professionals From the AHA/ASA

AHA/ASA Guideline

- Initiation of BP therapy is indicated for previously untreated patients with Several lifestyle modifications have been associated with BP reductions and are a reasonable part of a comprehensive antihypertensive therapy (Class IIa; Level of Evidence C). These modifications include salt restriction; weight loss; the consumption of a diet rich in fruits, vegetables, and low-fat dairy products; regular aerobic physical activity; and limited alcohol consumption.
- The optimal drug regimen to achieve the recommended level of reductions is uncertain because direct comparisons between regimens are limited. The available data indicate that diuretics or the combination of diuretics and an angiotensin-converting enzyme inhibitor is useful (Class I; Level of Evidence A).
- The choice of specific drugs and targets should be individualized on the basis of pharmacological properties, mechanism of action, and consideration of specific patient characteristics for which specific agents are probably indicated [eg, extracranial cerebrovascular occlusive disease, renal impairment, cardiac disease, and DM] (Class IIa; Level of Evidence B).

Kernan WN et al. 2014 AHA/ASA guideline

Hypertension

뇌졸중 이차예방 : 고혈압 Hypertension

2013 Korean Guideline

- 급성기 이후 허혈 뇌졸중 또는 일과성 허혈발작 환자의 혈압치료를 뇌졸중 및 주요혈관질환의 재발감소에중요하다. (근거수준Ib, 권고수준A) 이러한치료효과는 뇌졸중 발병전의 고혈 압병력과는 무관하므로, 모든 허혈 뇌졸중 환자들은 적절하게 혈압을 조절하는 것이 권장된다. (근거수준Ib, 권고수준A)
- 고혈압 약제의 선택과 혈압저하의 목표치는 협착 혹은 폐쇄성 두개외 혈관질환 유무, 당뇨병이나 신장질환등반유무등환자의상태에따라선택적으로고려되어야한다. (근거수준IV, 권고수준C)
- 허혈 뇌졸중 환자를 위한 적절한 고혈압 약제 선택은 관련 근거가 부족하여 아직 논란이 있으나, ACEI와I노제의병용투여가권장될수있다. (근거수준Ib, 권고수준A)
- 혈압조절을위해약물요법과함께다양한생활방식개선 이동반되어야한다. (근거수준IV, 권고수준C)

2013 뇌졸중 진료지침

Antihypertensive drug

Class of drugs	Main side effect	Contraindications/ special precautions
Calcium channel blockers (CCB)	• Pedal edema, Headache	Non-dihydropyridine CCBs (diltiazem) – hypersensitivity, bradycardia, conduction disturbances (AV block 2 or 3), CHF, LV dysfunctions
Angiotensin-converting enzyme inhibitors (ACEI)	• Cough, hypotension, • angio-neurotic edema • hyperkalemia	Hypersensitivity, pregnancy, bilateral renal artery stenosis
Angiotensin receptor blockers (ARBs)	• Safer than ACEI, • Hypotension • Headache, Dizziness	Hypersensitivity, pregnancy, bilateral renal artery stenosis
Thiazide and thiazide-like diuretics	• Electrolyte imbalance • total and LDL • HDL cholesterol • glucose levels, • uric acid levels	Hypersensitivity, gout
Beta-blockers	Impotence, Bradycardia, Fatigue	Bradycardia, Disturbances (AV block), DM, asthma, severe Cardiac failure
Alpha-blockers	Postural hypotension	Hypersensitivity

Comparison of recent HTN guideline

	JNC 8	ESH/ESC 2013	AHA/ACC	ASH/ISH
Threshold for Drug Rx	>140/90 < 60 yr >150/90 >60 yr	140/90 general non elderly <150/90 General elderly <80 y <150/90 General >80y <140/85 Diabetes <140/90 CKD no proteinuria <130/90 CKD + proteinuria	≥140/90	≥140/90 <80 yr ≥150/90 ≥80 yr
First line options	Non-black : Thiazide-type diuretic, ACEI, ARB, or CCB Black: thiazide-type diuretic or CCB Stroke or TIA: not recommend (JCN 7 : ACEI or Diuretics)	General : Diuretic, β-blocker, CCB, ACEI, or ARB Diabetes: ACEI or ARB CKD no proteinuria ACEI or ARB Stroke or TIA: any antihypertensive drug	CAD : β-blocker + ACEI CHF: ACEI or ARB + beta blocker, thiazide, Aldosterone antagonist Diabetes: ACEI or ARB, BB, CCB Kidney disease: ACEI or ARB Stroke or TIA: Thiazide, ACEI	Black: CCB or Thiazide-type diuretic Non-black <60y ARB or ACEI Non-black >60y CCB or thiazide diuretic DM: ARB or ACEI CKD: ARB or ACEI CAD : β-blocker with ARB or ACEI Stroke : ACEI or ARB CHF: ARB or ACEI + β-blocker + diuretics
Initiate Therapy: w/ 2 drugs	≥160/100	"Markedly elevated BP"	≥160/100	≥160/100

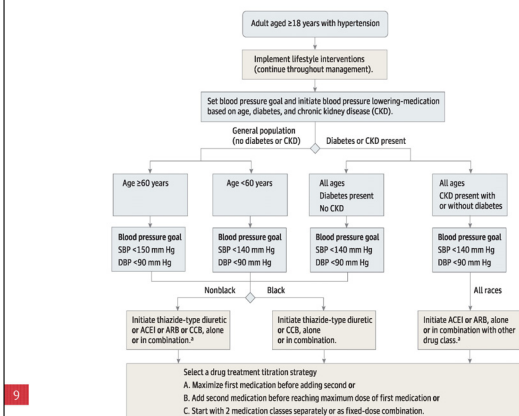
Comparison of recent HTN guideline

Group	General	BP Goal (mm Hg)	DM*	CKD**
JNC 8:	<60 yr: <140/90 ≥60 yr: <150/90	< 140/90	< 140/90	< 140/90
ESH/ESC:	< 140/90	< 140/85	< 140/85	< 140/90
Elderly	140-150/90 (<80 yr: SBP<140)	(SBP < 130 if proteinuria)		
ASH/ISH	< 140/90 ≥80 yr: <150/90	< 140/90	< 140/90	< 140/90
AHA/ACC	< 140/90	< 140/90	< 140/90	< 140/90

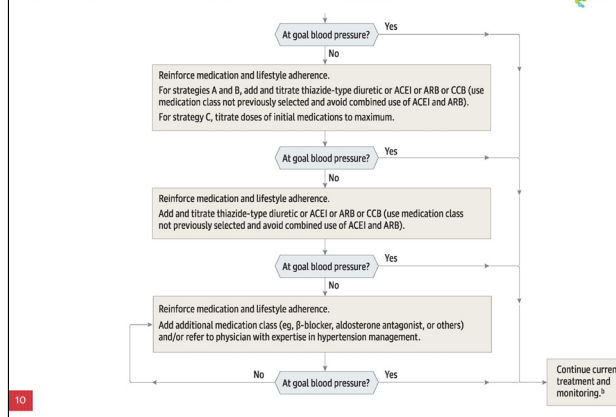
*ADA: < 140/80 or lower

**KDIGO: ≤140/90 w/o albuminuria
≤130/80 if ≥30 mg/24hr

Algorithm of antihypertensive drug : JCN 8

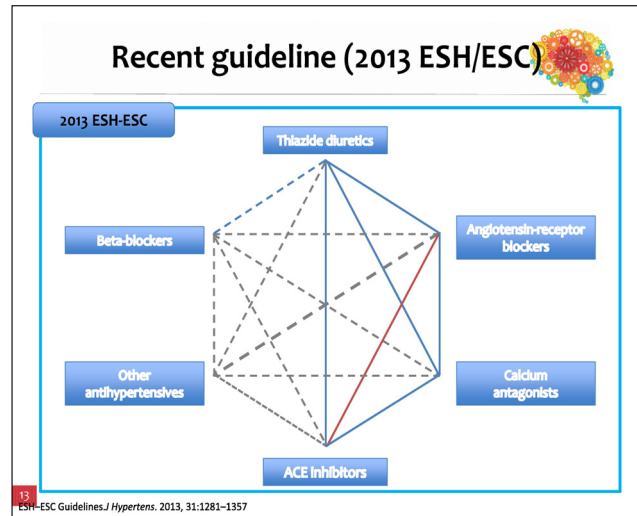
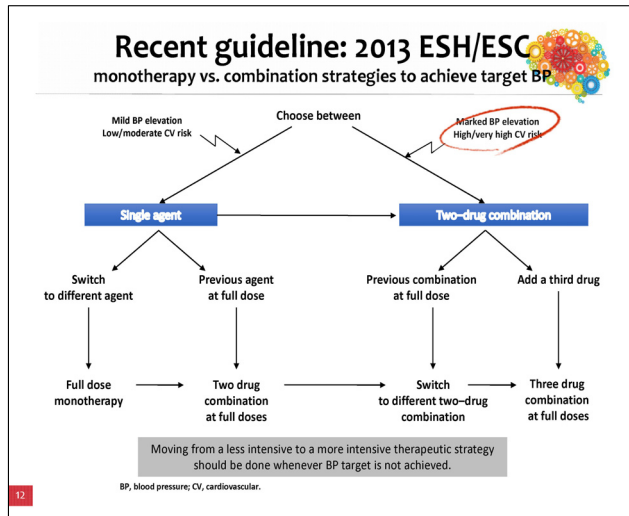


Algorithm of antihypertensive drug : JCN 8



Antihypertensive treatment preferred drugs : JCN 7

Compelling Indication	Initial therapeutic option	Clinical trials
Heart failure	THIAZ, BB, ACEI, ARB, ALDO ANT	ACC/AHA Heart Failure Guideline, MERIT-HF, COPERNICUS, CIBIS, SOLVD, AIRE, TRACE, ValHEFT, RALES
Postmyocardial infarction	BB, ACEI, ALDO ANT	ACC/AHA Post-MI Guideline, BHAT, SAVE, Capricorn, EPHEsus
High CAD risk	THIAZ, BB, ACE, CCB	ALLHAT, HOPE, ANBP2, LIFE, CONVINCE
Diabetes	THIAZ, BB, ACE, ARB, CCB	NKF-ADA Guideline, UKPDS, ALLHAT
Chronic kidney disease	ACEI, ARB	NKF Guideline, Captopril Trial, RENAAL, IDNT, REIN, AASK
Recurrent stroke prevention	THIAZ, ACEI	PROGRESS



Drugs to be preferred in specific conditions : 2013 ESH/ESC

Condition	Favoring Drug
Asymptomatic organ damage	
LVH	ACE inhibitor, CCB, ARB
Asymptomatic atherosclerosis	CCB, ACE inhibitor
Micro-albuminuria	ACE inhibitor, ARB
Renal dysfunction	ACE inhibitor, ARB
Clinical event	
Previous stroke	Any agent affecting lowering BP
Previous MI	BB, ACE inhibitor, ARB
Angina pectoris	BB, CCB
CHF	Diuretic, BB, ACE inhibitor, ARB, mineralcorticoid receptor antagonist
Aortic aneurysm	BB
Af, prevention	ACE inhibitor, ARB, mineralcorticoid receptor antagonist
Af, ventricular rate control	BB, non-dihydropyridine CCB
ESRD/proteinuria	ACE inhibitor, ARB
PAD	ACE inhibitor, CCB
Other	
Isolated systolic hypertension (elderly)	Diuretic, CCB
Metabolic syndrome	ACE inhibitor, ARB, CCB
Diabetes mellitus	ACE inhibitor, ARB
Pregnancy	Methyldopa, BB, CCB
blacks	Diuretic, CCB

Antihypertensive treatment in elderly

- BP goal is the same as in younger patients, < 140/90 mmHg or below, if tolerated, while many elderly patients need **two or more drugs** to achieve this
- In subjects aged **≥80 yrs**, evidence for benefits of antihypertensive treatment is as yet inconclusive, despite positive results of HYVET Study (2008). However, there is no reason for interrupting a successful and **well tolerated therapy** when a patient reaches 80 yrs or over
- Because of the **increased risk of postural hypotension**, BP should always be **measured also in the standing position**
- Drug treatment should be tailored to the risk factors, **target organ damage** and associated CV and non-CV conditions that are frequent in the elderly

Risk Factor Control for All Patients With TIA or Ischemic Stroke

Diabetes Mellitus

Guidelines for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
Guideline for Healthcare Professionals From the AHA/ASA

AHA/ASA Guideline

- After a TIA or ischemic stroke, **all patients should probably be screened for DM with testing of fasting plasma glucose, HbA1C, or an oral glucose tolerance test**. Choice of test and timing should be guided by clinical judgment and recognition that acute illness may temporarily perturb measures of plasma glucose. In general, **HbA1C** may be more accurate than other screening tests in the immediate post-event period (Class IIa; Level of Evidence C). (New recommendation)
- Use of existing guidelines from the ADA for glycemic control and cardiovascular risk factor management is recommended for patients with an ischemic stroke or TIA who also have **DM or pre-DM** (Class I; Level of Evidence B).

disorders of glucose metabolism

- DM type 1 & 2: (HbA_{1c} ≥ 6.5%)
- pre-DM: (HbA_{1c} 5.7% ~ 6.4%)
 - impaired fasting glucose: plasma glucose 100-125 mg/dL
 - impaired glucose tolerance: PP2h 140-199 mg/dL during a 75g oral GTT
 - intermediate elevations in HbA_{1c}

Kernan WN et al. 2014 AHA/ASA guideline

Risk Factor Control for All Patients With TIA or Ischemic Stroke

Diabetes Mellitus

뇌졸중의 이차예방: 당뇨

2013 Korean Guideline

- 당뇨병을 동반한 뇌졸중 환자에서 소혈관 합병증(근거 수준 Ia, 권고 수준 A) 및 대혈관 합병증(근거 수준 IIa, 권고 수준 B)의 예방을 위해 혈당을 가능한 한 정상수준으로 조절하도록 추천된다.
- HbA1c의 목표 수치가 7%미만이 되도록 혈당을 조절하는 것이 바람직하다. (근거수준 IIb, 권고수준 B)

2013 뇌졸중 진료지침

Recent Guideline : 2015 ADA

Criteria for the diagnosis of Diabetes

A1C $\geq 6.5\%$

OR

Fasting plasma glucose (FPG)
 ≥ 126 mg/dL (7.0 mmol/L)

OR

2-h plasma glucose ≥ 200 mg/dL
(11.1 mmol/L) during an OGTT

OR

A random plasma glucose ≥ 200 mg/dL (11.1 mmol/L) in a patient with classic symptoms of hyperglycemia or hyperglycemic crisis

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ADA. 2. Classification and Diagnosis. Diabetes Care 2015;38(suppl 1):S9; Table 2.1

Risk Factor Control for All Patients With TIA or Ischemic Stroke

Recent Guideline : 2015 ADA

Standards of Medical Care in Diabetes 2015: Pharmacological therapy for type 2 DM

2015 ADA guideline

- Metformin, if not contraindicated and if tolerated, is the preferred **initial pharmacological agent** for type 2 Diabetes A
- In patients with newly diagnosed type 2 diabetes and **markedly symptomatic and/or elevated blood glucose levels or A1C**, consider **insulin therapy** (with or without additional agents) E
- If noninsulin monotherapy at maximal tolerated dose does not achieve or maintain the A1C target over **3 months**, add a second oral agent, a **GLP-1 receptor agonist, or insulin A**
- A patient-centered approach should be used to guide choice of pharmacological agents
 - Considerations include efficacy, cost, potential side effects, effects on weight, comorbidities, hypoglycemia risk, and patient preferences E
- Due to the progressive nature of type 2 diabetes, insulin therapy is eventually indicated for many patients with type 2 diabetes B

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ADA. 2. Classification and Diagnosis. Diabetes Care 2015;38(suppl 1):S9; Table 2.1

Risk Factor Control for All Patients With TIA or Ischemic Stroke

Recent Guideline : 2015 ADA

Standards of Medical Care in Diabetes 2015: Pharmacological therapy for type 2 DM

2015 ADA guideline

- Perform the A1C test **at least two times a year** in patients who are meeting treatment goals (and who have stable glycemic control). E
- Perform the A1C test **quarterly** in patients whose therapy has changed or who are not meeting glycemic goals. E
- Use of point-of-care testing for A1C provides the opportunity for more timely treatment changes. E

Table 6.2—Summary of glycemic recommendations for nonpregnant adults with diabetes

A1C	<7.0%*
Preprandial capillary plasma glucose	80–130 mg/dL* (4.4–7.2 mmol/L)
Peak postprandial capillary plasma glucose†	<180 mg/dL* (<10.0 mmol/L)

*More or less stringent glycemic goals may be appropriate for individual patients. Goals should be individualized based on duration of diabetes, age/life expectancy, comorbid conditions, known CVD or advanced microvascular complications, hypoglycemia unawareness, and individual patient considerations.

†Postprandial glucose may be targeted if A1C goals are not met despite reaching preprandial glucose goals. Postprandial glucose measurements should be made 1–2 h after the beginning of the meal, generally peak levels in patients with diabetes.

ADA. 2. Classification and Diagnosis. Diabetes Care 2015;38(suppl 1):S9; Table 2.1

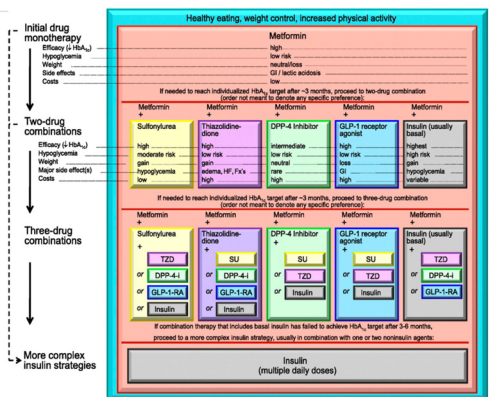
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	Metformin	DPP-4 Inhibitor	GLP-1 Agonist	Sulfonylurea	Glinide	TZD	Colesevelam	AGI	Insulin	Pramlintide
Benefits										
PPG - lowering	Mild	Moderate	Moderate to Marked	Moderate	Moderate	Mild	Mild	Moderate	Moderate to Marked	Moderate to Marked
FPG - lowering	Moderate	Mild	Mild	Moderate	Mild	Moderate	Mild	Neutral	Moderate to Marked	Mild
Nonalcoholic fatty liver disease (NAFLD)	Mild	Neutral	Mild	Neutral	Neutral	Moderate	Neutral	Neutral	Neutral	Neutral
Risks										
Hypoglycemia	Neutral	Neutral	Neutral	Moderate	Mild	Neutral	Neutral	Neutral	Moderate to Severe	Neutral
GI Symptoms	Moderate	Neutral	Moderate	Neutral	Neutral	Neutral	Moderate	Moderate	Neutral	Moderate
Risk of use with renal insufficiency	Severe	Reduce Dosage	Moderate	Moderate	Neutral	Mild	Neutral	Neutral	Moderate	Neutral
Contraindicated if liver failure or predisposition to lactic acidosis	Severe	Neutral	Neutral	Moderate	Moderate	Moderate	Neutral	Neutral	Neutral	Neutral
Heart failure/Edema	Contra-indicated in CHF	Neutral	Neutral	Neutral	Neutral	Mild/Moderate	Neutral	Neutral	Neutral Unless with TZD	Neutral
Weight Gain	Benefit	Neutral	Benefit	Mild	Mild	Moderate	Neutral	Neutral	Mild to Moderate	Benefit
Fractures	Neutral	Neutral	Neutral	Neutral	Neutral	Moderate	Neutral	Neutral	Neutral	Neutral
Drug-Drug Interactions	Neutral	Neutral	Neutral	Moderate	Moderate	Neutral	Neutral	Neutral	Neutral	Neutral

Risk Factor Control for All Patients With TIA or Ischemic Stroke

Recent Guideline : 2015 ADA

Standards of Medical Care in Diabetes 2015: Pharmacological therapy for type 2 DM



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ADA. 2. Classification and Diagnosis. Diabetes Care 2015;38(suppl 1):S9; Table 2.1

Risk Factor Control for All Patients With TIA or Ischemic Stroke

Dyslipidemia

Guidelines for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
Guideline for Healthcare Professionals From the AHA/ASA

2014 AHA/ASA Guideline

- Statin therapy with **intensive lipid-lowering effects is recommended** to reduce risk of stroke and cardiovascular events among patients with ischemic stroke or TIA presumed to be of **atherosclerotic origin** and an **LDL-C level ≥ 100 mg/dL** with or without evidence for other clinical ASCVD (Class I; Level of Evidence B). (Revised recommendation)
- Statin therapy with intensive lipid-lowering effects is recommended to reduce risk of stroke and cardiovascular events among patients with ischemic stroke or TIA presumed to be of **atherosclerotic origin**, an **LDL-C level < 100 mg/dL**, and **no evidence for other clinical ASCVD** (Class I; Level of Evidence C). (New recommendation)
- Patients with ischemic stroke or TIA and other comorbid ASCVD should be otherwise managed according to the 2013 ACC/AHA cholesterol guidelines, which include lifestyle modification, dietary recommendations, and medication recommendations (Class I; Level of Evidence A). (Revised recommendation)

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Risk Factor Control for All Patients With TIA or Ischemic Stroke

Dyslipidemia

뇌졸중의 이차예방: 고지혈증

2013 Korean Guideline

- 허혈 뇌졸중의 경우, 고지혈증은 반드시 교정되어야 하며, 죽상경화성 동맥질환에 의한 허혈 뇌졸중이나 관상동맥질환을 동반한 허혈 뇌졸중 환자의 고지혈증 치료기준은 NCEP-ATP III의 기준을 따른다. 생활방식의 변경,식이요법, 약물 등이 고려될 수 있으며, 약물의 경우에는 스타틴 약제의 사용이 추천된다. (근거수준 Ia, 권고수준 A)
- 관상동맥질환을 동반하거나 증후성 죽상경화성 허혈뇌졸중 환자의 콜레스테롤 교정 목표는 저밀도 콜레스테롤을 기준으로 하여 100mg/dL 이하이다. (근거수준 Ia, 권고수준 A)
- 다발성의 위험질환을 동반한 고위험군 환자들의 경우, 더욱 적극적인 치료를 고려해 볼 수 있다. (근거수준 Ia, 권고수준 A)

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Risk Factor Control for All Patients With TIA or Ischemic Stroke

Smoking

AHA/ASA Guideline

- Healthcare providers should **strongly advise** every patient with stroke or TIA who has smoked in the past year **to quit** (Class I; Level of Evidence C).
- It is reasonable to advise patients after TIA or ischemic stroke to **avoid environmental (passive) tobacco smoke** (Class IIa; Level of Evidence B).
- Counseling, nicotine products, and oral smoking cessation medications** are effective in helping smokers to quit (Class I; Level of Evidence A).

2013 Korean Guideline

- 흡연하는 뇌졸중 환자에게 금연을 강력히 권고하여야 한다. (근거수준 IV, 권고수준 C)
- 뇌졸중 환자는 간접흡연도 피하도록 권고하여야 한다. (근거수준 IIb, 권고수준 B)

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Risk Factor Control for All Patients With TIA or Ischemic Stroke

Alcohol

2014 AHA/ASA Guideline

- Patients with ischemic stroke, TIA, or hemorrhagic stroke who are **heavy drinkers** should **eliminate or reduce their consumption of alcohol** (Class I; Level of Evidence C).
- Light to moderate amounts of alcohol consumption (**up to 2 drinks** per day for men and up to **1 drink** per day for nonpregnant women) may be reasonable, **although nondrinkers should not be counseled to start drinking** (Class IIb; Level of Evidence B).

2013 Korean Guideline

- 뇌졸중 환자 중 과도 음주자(heavy alcoholics)는 최대한 음주량을 줄여야 한다. (근거수준 IV, 권고수준 C)

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Risk Factor Control for All Patients With TIA or Ischemic Stroke

Obesity

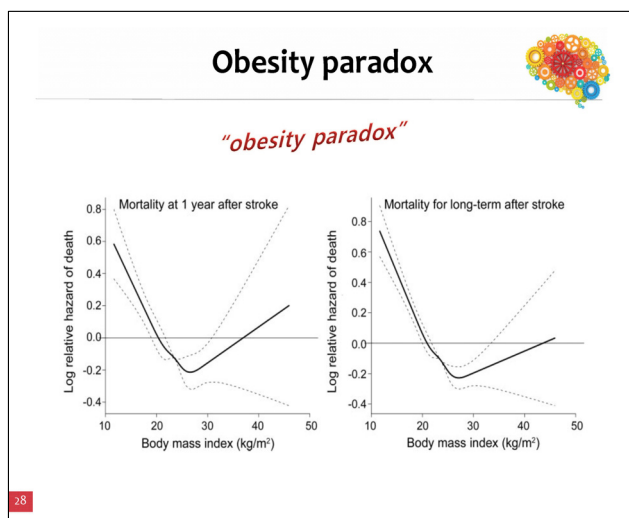
2014 AHA/ASA Guideline

- All patients with TIA or stroke should be screened for obesity with **measurement of BMI** (Class I; Level of Evidence C). (New recommendation)
- Despite the demonstrated beneficial effects of weight loss on cardiovascular risk factors, the **usefulness of weight loss** among patients with a recent TIA or ischemic stroke and obesity is **uncertain** (Class IIb; Level of Evidence C). (New recommendation)

2013 Korean Guideline

- 체중의 증가는 뇌졸중 발생률의 증가와 관련되어 있으며, 이는 용량 의존적인 관계를 보여준다. 따라서 과체중 혹은 비만일 경우 적극적으로 체중을 감량하는 것이 권장된다. (근거수준 IV, 권고수준 C)

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Risk Factor Control for All Patients With TIA or Ischemic Stroke

physical activity, diet

2014 AHA/ASA Guideline

- For patients with ischemic stroke or TIA who are capable of engaging in physical activity, **at least 3 to 4 sessions per week of moderate- to vigorous-intensity aerobic physical exercise** are reasonable to reduce stroke risk factors. Sessions should last an **average of 40 minutes**. Moderate-intensity exercise is typically defined as sufficient to break a sweat or noticeably raise heart rate (eg, **walking briskly, using an exercise bicycle**). Vigorous-intensity exercise includes activities such as **jogging** (Class IIa; Level of Evidence C). (Revised recommendation)
- For patients who are able and willing to initiate increased physical activity, referral to a comprehensive, behaviorally oriented program is reasonable (Class IIa; Level of Evidence C). (New recommendation)
- For individuals with disability after ischemic stroke, supervision by a healthcare professional such as a physical therapist or cardiac rehabilitation professional, at least on initiation of an exercise regimen, may be considered (Class IIb; Level of Evidence C).

2013 Korean Guideline

- 신체활동과 운동은 혈압 강하, 체중의 감소, 혈중 콜레스테롤의 변화 등을 통해 뇌졸중의 위험을 낮추는 것으로 알려져 있으므로 규칙적인 운동이 추천된다. (근거수준 IV, 권고수준 C)

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Risk Factor Control for All Patients With TIA or Ischemic Stroke

Diet, nutrition

Guidelines for the Prevention of Stroke in Patients With Stroke and Transient Ischemic Attack
Guideline for Healthcare Professionals From the AHA/ASA

2014 AHA/ASA Guideline

1. It is reasonable to conduct a nutritional assessment for patients with a history of ischemic stroke or TIA, looking for signs of **over nutrition or undernutrition** (Class IIa; Level of Evidence C). (New recommendation)
2. Patients with a history of ischemic stroke or TIA and signs of undernutrition should be referred for **individualized** nutritional counseling (Class I; Level of Evidence B). (New recommendation)
3. Routine supplementation with a **single vitamin or combination of vitamins** is not recommended (Class III; Level of Evidence A). (New recommendation)
4. It is reasonable to recommend that patients with a history of stroke or TIA reduce their **sodium intake to less than ≈ 2.4 g/d**. Further reduction to **<1.5 g/d** is also reasonable and is associated with even greater BP reduction (Class IIa; Level of Evidence C). (New recommendation)
5. It is reasonable to counsel patients with a history of stroke or TIA to follow a **Mediterranean-type diet** instead of a low-fat diet. The Mediterranean-type diet emphasizes **vegetables, fruits, and whole grains and includes low-fat dairy products, poultry, fish, legumes, olive oil, and nuts**. It limits intake of **sweets and red meats** (Class IIa; Level of Evidence C). (New recommendation)

30 Kernan WN et al. 2014 AHA/ASA guideline

Risk Factor Control for All Patients With TIA or Ischemic Stroke

Diet, nutrition

뇌졸중의 이차예방: 고지혈증

2013 Korean Guideline

1. 나트륨의 일일 섭취량을 줄이고 칼륨의 섭취량을 늘리는 것이 뇌졸중의 예방을 위해 권장된다. (권고수준 GPP)
2. 과일과 채소를 많이 섭취하는 것이 뇌졸중 예방에 도움이 될 수 있다. (권고수준 GPP)

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Summary

- Hypertension**
 - Initiation of BP : $<140/90$
 - BP target : $<140/90$ (DM or CKD $<130/80$)
 - ACEI or ARB
- Diabetes Mellitus**
 - Diagnosis of DM : HbA1C >6.5
 - Target HbA1c: <7.0
 - HbA1c f/u per 6 month or 3 month
 - In Pt with CVD, BP $<130/80$
 - Statin therapy
- Dyslipidemia**
 - Initiation of statin : <100 (70) in patients with atherosclerotic stroke
- Alcohol Smoking Diet**
 - quit smoking
 - Reduce alcohol consumption
 - Mediterranean-type diet**

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