

Which target organ damage should I always investigate? And how ?

The goal of the management of hypertension is to prevent the development of target organ damages (TOD) which lead to the increased morbidity and mortality of hypertensive patients. Therefore, it is recommended to perform a careful assessment of TOD in all hypertensive patients, especially when it might influence the decision to treat. These assessments may be repeated periodically depending on the clinical situation. TOD represents a marker of silent cardiovascular diseases and some of them can be reversed controlling blood pressure.

Target organ damage represents structural or functional changes which occur in arteries or end-organs essentially the heart, the kidneys, the brain and the eyes.

1) Assessments of TOD which must be done at baseline

Organ	How	What we look for	Criteria	In which patients
Heart	ECG	<ul style="list-style-type: none"> Left ventricular hypertrophy $S_{V1}+R_{V5}$ <i>(Sokolov criteria)</i> $S_{V3}+R_{aVL}$ <i>(Cornell product)</i> arrhythmias 	LVH at ECG >35 mm >28 mm (Men) >20 mm (Women)	All patients
Kidney	Creatinine ACR : albumin/creatinine ratio on a spot urine Urine analysis	<ul style="list-style-type: none"> Glomerular filtration rate (GFR) Calculation of estimated GFR (CKD-EPI) Urinary protein excretion Hematuria, leucocyturia 	CKD classification (ml/min.1.73m ²) stage 1 : >90 stage 2: 60-89 stage 3: 30-59 stage 4: 15-29 stage 5: <15 Microalbuminuria: 30-300 mg/g or 3-30 mg/mmol Macroalbuminuria: >300 mg/g >30 mg/mmol	All patients All patients and specifically in patients with diabetes or renal disease
Brain	MMSE	Cognitive functions	MMSE <24 suspect of dementia	In elderly and/or suspicion of cognitive dysfunction
Artery	Pulse pressure PP = syst-diast	Vascular stiffness	Normal: < 60 Stiffness: > 60	All elderly patients
Eye	Funduscopy	Retinopathy (microvascular lesions)	Stage 1-4 retinopathy	Patients with diabetes or severe hypertension

2) Assessments which should be done as complements if the baseline screening is abnormal and clinical elements of suspicion are high.

Heart:

- Echocardiography
- Exercise ECG
- Holter monitoring
- Coronary angiography
- Cardiac MRI
- Abdominal aorta ultrasound

Kidneys:

- Renal Doppler and ultrasound
- Renal angiography

Brain:

- Carotid ultrasound
- Brain imaging (MRI or CT-scan)

Peripheral arteries:

- Ankle-brachial index
- Pulse wave velocity

These measurements are conditioned by the availability of infrastructures and devices and should be done today by specialists.