

UPDATE
OF
HYPERTENSION
DIAGNOSIS
&
TREATMENT
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ارتفاع ضغط الدم في ضوء الجايدلاينز

التصنيف

- It is recommended that BP be classified as optimal, normal, high-normal,
Or
Grades 1–3 hypertension, According to office BP

Classification of office BP and definitions of hypertension grade

Category	Systolic (mmHg)		Diastolic (mmHg)
Optimal	< 120	and	< 80
Normal	120–129	and/or	80–84
High normal	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	160–179	and/or	100–109
Grade 3 hypertension	≥ 180	and/or	≥ 110
Isolated systolic hypertension	≥ 140	and	< 90

عوامل الخطوره في مرضى ارتفاع ضغط الدم

1. Sex: Men > Women
2. Age: elderly patients are more risky
3. Smoking: current smoker or Ex-smoker
4. Lipid profile (total Cholesterol, LDL(C), HDL(C))
5. Diabetes
6. Obesity or overweight
7. FH of premature CVD (before 55 in men & 65 in women)
8. FH or parental history of early onset HTN
9. Early onset menopause in women
10. High uric acid (if associated with central obesity: Metabolic syndrome)
11. Sedentary life
12. Psychosocial and Socio-economic factors
13. HR > 80 at rest

ما هي خطورة ارتفاع ضغط الدم على المدى البعيد؟

- Blood vessels: arterial stiffness & arteriosclerosis
- Brain vessels: Cerebrovascular disease
- Ischemic infarction, TIA, ICH
- Retinal vessels: exudates, Hemorrhages and papilledema
- Heart: LVH hypertensive heart disease, diastolic heart failure, CAD, MI ,AF
- Aorta: Aortic aneurysms
- Renal vessels: Hypertensive nephrosclerosis, Microalbuminuria & CKD
- Limb vessels (Peripheral arterial disease) & leg ischemia

الجمعية الأوروبية لارتفاع ضغط الدم (ESH/ESC) بتسمى الحاجات اللي ذكرناها دي

Hypertension mediated organ damage (HMOD)

بينما ال

American Joint National Committee (JNC) & ACC/AHA

& UK (NICE, BHS & Irish Hypertension society

ببسموها

Target Organ Damage (TOD)

ازاي نعرف ان مريض الضغط عنده HMOD او TOD؟

ممکن تكون

Asymptomatic HMOD

هنعرفها بالوسائل الاتيه

- Arterial stiffness (pulse pressure (SBP - DBP) in elderly ≥ 60)
- Carotid femoral PWV (pulse wave velocity) > 10 m.sec
- ECG: LVH
- ECHO: LVH
- Microalbuminuria : Albumin creatinine ratio (ACR ≥ 30)
- Moderate CKD (GFR 30 - 59) with elevated creatinine without clinical features
- Asymptomatic limb ischemia (Ankle brachial index < 0.9)
- Retinopathy (exudates, hemorrhages and papilledema)

طب امتى نقول ان مريض الضغط عنده? Established CV disease and renal disease

☒ Cerebrovascular disease (ischemic infarction, ICH & TIA) ☞

هتعرفهم من الهستورى والكليينكال والاشعات لو متاحه

☒ CAD: chronic stable angina, MI, ☞

Revascularization قسطرة

او مغير شرايين

وكمان بالهستورى

وال ECG & ECHO

Presence of atheromatous disease by imaging

(Atheromatous plaques)

زى الدوبلكس والقسطره

☒ Heart failure (especially HFpEF (HF é preserved EF) ☞

هتعرفه كليينكال وبالايكو

☒ PAD ☞

هتعرفه كليينكال

و بال

Ankle brachial index < 0.9

☒ AF: ECG

☒ Severe CKD ☞

هتعرفه بالكرياتينين وحساب ال

GFR < 30

◀ وجود ال

Asymptomatic HMOD or Established CVD or renal disease

من عدمها مع عوامل اخرى زى السن والحاجات اللى ذكرناها فى الاول،،

بتخلى درجة خطورة المرض بتختلف من شخص للتانى

عشان كده العلماء الاوروبيون عملوا

Risk stratification of Hypertensive patients

طبقا لكل ما ذكرناه وجمعه كالاتى

Classification into

☒ Very high risk patients

☒ High risk patients

☒ Moderate risk patients

☒ Low risk patients

واضافوا نظام سكور بنسبه مئويه للعوامل والمعطيات السابقه لكل درجه

☒ Very high risk

People with any of the following:

- ▣ Documented CVD, either clinical or unequivocal on imaging
- ▣ Clinical CVD includes acute myocardial infarction, acute coronary syndrome, coronary or other arterial revascularization, stroke, TIA, aortic aneurysm and PAD.
- ▣ Unequivocal documented CVD on imaging includes significant plaque (i.e. $\geq 50\%$ stenosis) on angiography or ultrasound.
It does not include increase in carotid intima-media thickness.
- ▣ Diabetes mellitus with target organ damage, e.g. proteinuria or a with a major risk factor such as grade 3 hypertension or hypercholesterolemia
- ▣ Severe CKD (eGFR < 30 mL/min/1.73 m²)
- ▣ A calculated 10-year SCORE of $\geq 10\%$

✦ High risk patients

People with any of the following:

- Marked elevation of a single risk factor,
Particularly cholesterol > 8 mmol/L (> 310 mg/dL) e.g. Familial hypercholesterolemia
- Grade 3 hypertension (BP $\geq 180/110$ mmHg)
- Most other people with diabetes mellitus (accept some young people with type 1 diabetes mellitus and without major risk factors that may be moderate risk)
- Hypertensive LVH
- Moderate CKD (eGFR 30–59 mL/min/1.73 m²)
- A calculated 10-year SCORE of 5–10%

✦ Moderate risk patients

People with:

- A calculated 10-year SCORE of 1% to $< 5\%$
- Grade 2 hypertension
- Many middle-aged people belong to this category

✦ Low risk patients

People with:

- A calculated 10-year SCORE of $< 1\%$

طب واحد هيسأل ،، ازای نحسب ال

Calculated 10-year risk SCORE?

هتسجل اللينك ده عندك

<http://www.heartscore.org/>

هتدخل فيه وهتمشى مع ال

(Calculator)

إبتملی بیانات سهله جداا کالاتی

HeartScore[®]

Calculate the 10-year CVD risk of your patient

Personal details



First name *

Last name *

Birthdate *

 /

(month / year)

Sex *

Male Female

Full Score



Systolic blood pressure: *

Cholesterol: *

mmol/L mg/dl

HDL Cholesterol

Smoker: *

Yes No



Calculate Risk

← سؤال مهم جدا!!! !!

هل بنحسب ال Calculated 10 year risk SCORE لكل مرضى الضغط؟

لا طبعا :

✚ لو المريض من خلال المعلومات اللي اخذتها من الهستورى عن ال HMOD او ال TOD

حاطاه فى درجة ال

Very high risk & high risk

مش محتاجين نحسب ال Score ده خالص ،،

لانه هيطلع اوتوماتيك اكثر من 5

5 - 10 --> high risk

≥10 --> very high risk

وده هنعرفه من المعايير اللي ذكرناها لكل درجة

✚ اما ال Moderate & low

المفروض انك تحسب ال

Estimated 10 year risk SCORE

✚ ده نص توصيات الجمعيه الاوروبيه ESH

CV risk assessment with the SCORE system is recommended for hypertensive patients who are not already at high or very high risk due to established CVD, renal disease or diabetes, a markedly elevated single risk factor (e.g. cholesterol), or hypertensive LVH

✚ وعشان تتصوروا لما اتضاف

Risk factors & HMOD

على

Grades of HTN

عمل تفاصيل فى درجات الخطوره فى جدول كالاتى (ليس مطلوب منا حفظه)

2018 ESC/ESH Hypertension Guidelines

Classification of hypertension stages according to BP levels, presence of CV risk factors, HMOD, or comorbidities

Hypertension disease staging	Other risk factors, HMOD, or disease	BP (mmHg) grading			
		High-normal SBP 130–139 DBP 85–89	Grade 1 SBP 140–159 DBP 90–99	Grade 2 SBP 160–179 DBP 100–109	Grade 3 SBP ≥ 180 DBP ≥ 110
Stage 1 (uncomplicated)	No other risk factors	Low risk	Low risk	Moderate risk	High risk
	1 or 2 risk factors	Low risk	Moderate risk	Moderate to high risk	High risk
	≥ 3 risk factors	Low to moderate risk	Moderate to high risk	High risk	High risk
Stage 2 (asymptomatic disease)	HMOD, CKD grade 3, or diabetes mellitus without organ damage	Moderate to high risk	High risk	High risk	High to very high risk
Stage 3 (established disease)	Established CVD, CKD grade ≥ 4, or diabetes mellitus with organ damage	Very high risk	Very high risk	Very high risk	Very high risk

سؤال اخير : هل يا ترى الاوروبيين بس هما اللي عاملين سكور ؟

الجواب : لا طبعا

كل مدرسه عالميه عامله سكور طبعا ،، غالبا نفس الفكره ومقارب جدااا فى درجة ال risk والنسبه المئوية

مثال

Estimated 10 year risk by ACC/AHA (pooled cohort equation)

ده النظام الامريكى

Estimated 10 year risk by QRISK

وده النظام البريطانى

وكمان الاسكورات دى برده هيا اللي احنا هنستخدمها برده فى مريض ال dyslipidemia سواء كان عنده ضغط او لا ،، لانها بتعبر عن نسبة حدوث جلطة القلب والمخ المستقبليه

ملحوظه اخيره: فى النظام الاوروبى : رقم الضغط منفردا يعبر عنه ب Grade .

ولو ضيفت عليه risk factors وال (HMOD) TOD بيتحول الى Stage

وطبعا ده واضح فى الجدول الاخير

ازای تسأل على عوامل الخطوره فى مريض ارتفاع الضغط ؟

Risk factors:

- ☆ Family and personal history of hypertension, CVD, stroke, or renal disease
- ☆ Family and personal history of associated risk factors (e.g. familial hypercholesterolemia)
- ☆ Smoking history
- ☆ Dietary history and salt intake
- ☆ Alcohol consumption
- ☆ Lack of physical exercise/sedentary lifestyle
- ☆ History of erectile dysfunction
- ☆ Sleep history, snoring, sleep apnea (information also from partner)
- ☆ Previous hypertension in pregnancy/pre-eclampsia (in females)

ازای تعرف ان فيه (HMOD) Or (TOD) ؟

History and symptoms of HMOD, CVD, stroke, and renal disease

- **Brain and eyes:** headache, vertigo, syncope, impaired vision, TIA, sensory or motor deficit, stroke, Carotid revascularization, cognitive impairment, or dementia (in the elderly)
- **Heart:** chest pain, shortness of breath, edema, myocardial infarction, coronary revascularization, syncope, history of palpitations, arrhythmias (especially AF), heart failure
- **Kidney:** thirst, polyuria, nocturia, hematuria, urinary tract infections
- **Peripheral arteries:** cold extremities, intermittent claudication, pain-free walking distance, pain at rest, Peripheral revascularization
- Patient or family history of CKD (e.g. polycystic kidney disease)

امتى تشك ان فيه Secondary Hypertension ؟

History of possible secondary hypertension

- Young onset of grade 2 or 3 hypertension (< 40 years),
- Or sudden development of hypertension or rapidly worsening BP in older patients
- History of renal/urinary tract disease
- Recreational drug/ substance abuse/concurrent therapies: corticosteroids, nasal vasoconstrictor, Chemotherapy, yohimbine, liquorice (مهم)
- Repetitive episodes of sweating, headache, anxiety, palpitations, suggestive of pheochromocytoma
- History of spontaneous or diuretic-provoked hypokalemia, episodes of muscle weakness, and tetany (hyperaldosteronism)
- Symptoms suggestive of thyroid disease or hyperparathyroidism
- History of or current pregnancy and oral contraceptive use
- History of sleep apnea

ملحوظه :

الجيد لاينز الامريكه بتعتبر ان حدوث الضغط تحت ال ٣٠ سنه يخلينى افكر ان فيه ضغط ثانوى ،، بخلاف الاوربيين ،، بيعتبروا ان حدوثه قبل الاربعين مؤشر هام لاحتمالية الضغط الثانوى
 طبعاً سواء تحت ال ٣٠ او ال ٤٠ ،، مش شرط يطلع ثانوى ،، لكن لابد من البحث فى الاسباب الثانويه ولو طلعت مش موجوده وسنه حتى تحت الثلاثين يبقى ضغط اولى (Essential HTN)

ايه الحاجات المهم فحصها فى مريض الضغط ؟

- ⇒ Fundoscopic examination for hypertensive retinopathy
- ⇒ Palpation and auscultation of heart and carotid arteries
- ⇒ Palpation of peripheral arteries
- ⇒ Comparison of BP in both arms (at least once)

الاخيره دى فى غاية الاهميه ،، ودى شرحناها قبل كده

ايه الحاجات اللي هتدور عليها من خلال الفحص فى مريض ضغط شاكك انه ثانوى

Secondary Hypertension?

- Skin inspection – cafe-au-lait patches of neurofibromatosis (phaeochromocytoma)
- Kidney palpation for signs of renal enlargement in polycystic kidney disease
- Auscultation of heart and renal arteries for murmurs or bruits indicative of aortic coarctation or renovascular hypertension
- Comparison of radial with femoral pulse – to detect radio-femoral delay in aortic coarctation
- Signs of Cushing’s disease or acromegaly
- Signs of thyroid disease

كيف تقيس الضغط بطريقه صحيحه وكيف تشخصه طبقا للقياس؟

طريقة (١) : القياس بالعيادة - Office BP measurement

- ⇒ Patients should be seated comfortably in a quiet environment for 5 min before beginning BP measurements.

الشخص يجب ان يقعد ويسترخى لمدة لا تقل عن ٥ دقائق ،، (خد فيهم هستورى)

- ⇒ Three BP measurements should be recorded, 1–2 min apart, and additional measurements only if the first two readings differ by > 10 mmHg.

فى الزياره الواحده ،، نقيس ٣ مرات ،، بفارق دقيقه او اتنين بين كل قياس والاخر ،، ولو فى قياس فيهم زايد ب ١٠ .. نقيس مرتين تانيين ونبنى عليهم (لا تتسرع فى الحكم على قياس ضغط الدم)

- ⇒ BP is recorded as the average of the last two BP readings.

خد متوسط اخر قياسين ويبقى هو الرقم اللي هتسجله فى الزياره دى او فى الكشف ده

- ⇒ Use a standard bladder cuff (12–13 cm wide and 35 cm long) for most patients, but have larger and smaller cuffs available for larger (arm circumference > 32 cm) and thinner arms, respectively.

⇒ The cuff should be positioned at the level of the heart with the back and arm supported, to avoid muscle contraction and isometric-exercise dependent increases in BP

لابد من الالتزام بالوضع المذكور بهذه الكيفية لان الضغط يبعلى مع اى وضع غير مريح نتيجة تقلص العضلات

⇒ Measure BP in both arms at the first visit to detect possible between-arm differences

Use the arm with the higher value as the reference.

او على تنسى دى ،، قيس اول مره فقط فى الدراعين وسجل الدراع الاعلى فى القياس ويبقى هو اللى هتقيس عليه فيما بعد (والمريض يحفظ كده معاك)

كيف تشخص ارتفاع ضغط الدم بقياسه فى العياده ؟

➤ It is recommended that the diagnosis of hypertension should be based on:

⇒ Repeated office BP measurements on more than one visit, except when hypertension is severe (e.g. grade 3 and especially in high-risk patients).

⇒ At each visit, three BP measurements should be recorded, 1–2 min apart, and additional measurements should be performed if the first two readings differ by > 10 mmHg.

⇒ The patient's BP is the Average of the last two BP readings.

← طبقا لبروتوكول ال ESH/ESC ،،

من الممكن تشخيص الضغط طبقا لقياسات العياده باخذ متوسط قياس الرقمين النهائيين لآخر ارقام سجلتها فى اخر زيارتين ،،

او البديل استعمال بروتوكول ال NICE البريطانى اللى ذكرناه قبل كده ،،

مع ملاحظة ان قياس العياده ليس الادق على الاطلاق بل الادق هو قياس الضغط خارج العياده

بسبب وجود مشكلة ال **White coat HTN**

وهو ارتفاع الضغط المرتبط بوجود المريض فى العياده فقط و احتكاكه بالطبيب صاحب البالطو الابيض ،،

وده مش ضغط حقيقى لانه عباره عن ارتفاع مؤقت للضغط اثناء تواجد المريض فى المستشفى او العياده

ونوع اخر يسمى **masked Hypertension** وده العكس ،،

بمعنى ان الضغط طبيعى او high normal فى العياده وعالى خارج نطاق العياده وده ضغط حقيقى وخطير لانه بيعمل

Hypertension mediated organ damage (HMOD)

وبالتالى ال ESH/ESC قالت ،، ممكن يستحسن نشخص الضغط بقياسه بره العياده عن طريق

Home BP measurement

Or Ambulatory BP monitoring الاطلاق

طريقة (2) : القياس خارج العيادة Out-of-office BP

- Out-of-office BP measurement with ABPM and/or HBPM provided that these measurements are logistically and economically feasible.

بشرط القدره على عملها او تنفيذها بواسطة المريض

Out-of-office BP (i.e. ABPM or HBPM) is specifically recommended for a number of clinical indications, such as identifying white-coat and masked hypertension, quantifying the effects of treatment, and identifying possible causes of side-effects (e.g. symptomatic hypotension).

◀ امتى تبقى مضطر انك تقيس بنظام ال HBPM او ABPM بشكل اجبارى ،،

ببساطه لما تكون الحاله مشتبه انها اما

White coat HTN or Masked HTN

طب امتى تشتبه فى ال white coat ؟

- ➔ Conditions in which white-coat hypertension is more common, for example:
 - Grade I hypertension on office BP measurement وطبعاً ده كثير
 - Marked office BP elevation without HMOD

طب امتى تشتبه فى ال masked HTN ؟

- ➔ Conditions in which masked hypertension is more common, for example:
 - High-normal office BP
 - Normal office BP in individuals with HMOD or at high total CV risk

◀ طب هل فى حالات تانيه محتاج فيها برضه ال HBPM or ABPM

الاجابه ايوه

Evaluation of resistant hypertension

ملحوظه هامة : نظام قياس ال NICE مش صعب وسهل جدا وغير مكلف وبيجيب ال

White coat & masked

لانه معتمد على قياسات البيت

ارتفاع ضغط الدم فى ضوء الجايدلاينز البريطانية

Last update (NICE 2019)

✚ Measuring blood pressure

- ❖ Ensure that healthcare professionals taking blood pressure measurements have adequate initial training and periodic review of their performance.

لا يقيس الضغط الا طبيب بشرى فقط ومتخصص كمان

- ❖ Because automated devices may not measure blood pressure accurately if there is pulse irregularity (for example, due to atrial fibrillation), palpate the radial or brachial pulse before measuring blood pressure. If pulse irregularity is present, measure blood pressure manually using direct auscultation over the brachial artery.

- ❖ Healthcare providers must ensure that devices for measuring blood pressure are properly validated, maintained and regularly recalibrated according to manufacturers' instructions.

ينصح فقط بقياس الضغط بواسطة اجهزة الضغط ذات المؤشر (الزئبقى والهوائى) وليس الرقمى digital

- ❖ When measuring blood pressure in the clinic or in the home, standardize the environment and provide a relaxed, temperate setting, with the person quiet and seated, and their arm outstretched and supported. Use an appropriate cuff size for the person's arm.

✚ Diagnosing hypertension

- ❖ When considering a diagnosis of hypertension, measure blood pressure in both arms

مهم جدا قياس الضغط فى الدراعين اول مره

- If the difference in readings between arms is more than 15 mmHg, repeat the measurements.
- If the difference in readings between arms remains more than 15 mmHg on the second measurement, measure subsequent blood pressures in the arm with the higher reading.

بنسجل الرقم الاعلى وبنقيس بعد كده فى الدراع ده

- ❖ If blood pressure measured in the clinic is 140/90 mmHg or higher:

- Take a second measurement during the consultation.
- If the second measurement is substantially different from the first, take a third measurement.
- Record the lower of the last 2 measurements as the clinic blood pressure

- ❖ If clinic blood pressure is between 140/90 mmHg and 180/120 mmHg, offer ambulatory blood pressure monitoring (ABPM) to confirm the diagnosis of hypertension
(أصبح ال ABPM مهم جدااا لتأكيد التشخيص خصوصا فى المرضى صغيرى السن لتجنب الوقوع فى التشخيص الخاطئ)
(white coat hypertension)
- ❖ For people with a clinic blood pressure 180/120 or more even in one reading, no need for confirmation, diagnosis should be established at once with immediate commencement of treatment. ابدأ علاج فى ساعتها.
- ❖ If ABPM is unsuitable or the person is unable to tolerate it, offer home blood pressure monitoring (HBPM) to confirm the diagnosis of hypertension.
- ❖ While waiting for confirmation of a diagnosis of hypertension, carry out:
 - Investigations for target organ damage followed by ↴↴↴
 - Formal assessment of cardiovascular risk using a cardiovascular risk assessment tool
- ❖ When using ABPM to confirm a diagnosis of hypertension, ensure that at least 2 measurements per hour are taken during the person's usual waking hours (for example, between 08:00 a.m. and 22:00 pm). Use the average value of at least 14 measurements taken during the person's usual waking hours to confirm a diagnosis of hypertension.

قياس صباحا ومساء لمدّة ٧ ايام مع التسجيل فى ورقه بنسيميها chart وبنحسب متوسط القياسات

- ❖ When using HBPM to confirm a diagnosis of hypertension, ensure that:
 - ➔ for each blood pressure recording, 2 consecutive measurements are taken, at least 1 minute apart and with the person seated and
 - Blood pressure is recorded twice daily, ideally in the morning and evening and
 - Blood pressure recording continues for at least 4 days, ideally for 7 days.

Discard the measurements taken on the first day and use the average value of all the remaining measurements to confirm a diagnosis of hypertension.

- ❖ Confirm diagnosis of hypertension in people with a:
 - Clinic blood pressure of 140/90 mmHg or higher and
 - ABPM daytime average or HBPM average of 135/85 mmHg or higher.

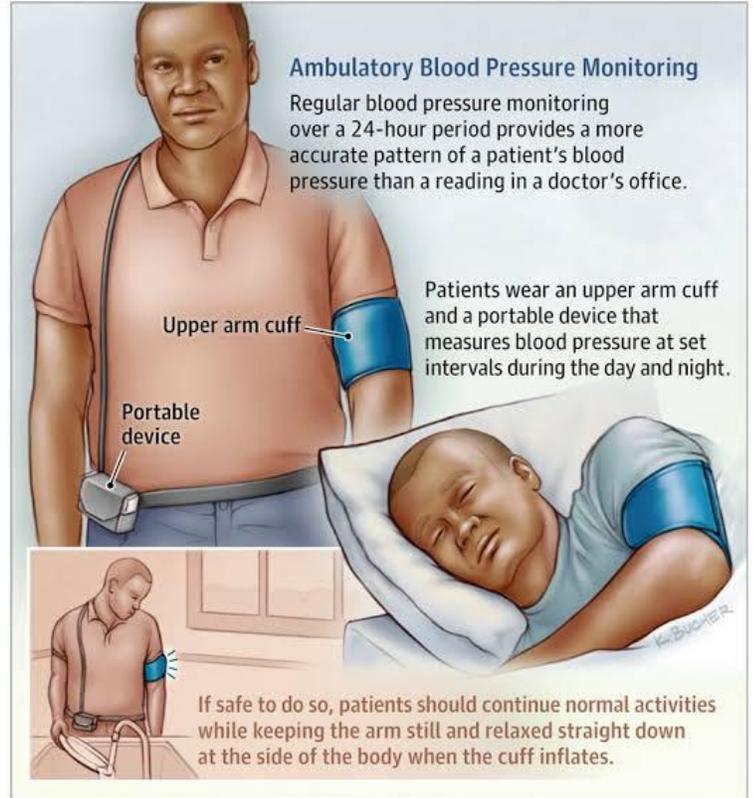


لكن لو عاوز ادق شئ ع الاطلاق ،، يبقى تطلب ال ABPM
 وده بالمناسبه جهاز بيتأجر من مراكز القلب ومش غالى وتطبيقه سهل جدا وببكتبله تقرير
 بالتشخيص
 وبجيب معلومات كثير عن ال outcome ومدى تعرض مريض الضغط ده للمضاعفات
 المحتمل

ايه كمان اهمية ال HBPM & ABPM ؟

✚ Clinical indications for HBPM or ABPM

- Evaluating symptoms consistent with hypotension during treatment
تقييم حدوث انخفاض فى الضغط مع العلاج
- When there is considerable variability in the office BP
اختلاف وتضارب فى ارقام القياسات فى العياده
- Exaggerated BP response to exercise
- Evaluation of BP control, especially in treated higher-risk patients



✚ Specific indications for ABPM rather than HBPM:

- ☞ Assessment of nocturnal BP values and dipping status (e.g. suspicions of nocturnal hypertension, such as in sleep apnea, CKD, diabetes, endocrine hypertension, or autonomic dysfunction)

Golden rule : while the patient is sleeping, The elevated BP at night (what we name it nocturnal HTN is risky for development of future CV target organ damage and is often associated with some secondary causes as mentioned above

Normally, BP is below 120/70 at night

We name such phenomenon "**BP Dipping during sleep**"

If it exceeds such value (i.e median of values $\geq 120/70$) --> the patient is described non-dipper

طب هل يا ترى ارقام تشخيص ال Office BP زى ارقام ال HBPM & ABPM ؟

لا طبعا

Definitions of hypertension according to office, ambulatory, and home BP levels

Category	Systolic (mmHg)		Diastolic (mmHg)
Office BP	≥ 140	and/or	≥ 90
Ambulatory BP			
Daytime (or awake) mean	≥ 135	and/or	≥ 85
Night-time (or asleep) mean	≥ 120	and/or	≥ 70
24-h mean	≥ 130	and/or	≥ 80
Home BP mean	≥ 135	and/or	≥ 85

ايه التحاليل اللى المفروض تعملها فى مريض الضغط ؟

+ Routine laboratory tests

#Hemoglobin and/or hematocrit (CBC)

عشان ال polycythemia

#fasting blood glucose and glycated HbA1c

اي مريض ضغط لازم تحلله سكر والعكس صحيح برده

#Blood lipids: total cholesterol, LDL cholesterol, HDL cholesterol and Blood triglycerides

مهم عشان هتسب عليه Estimated 10 year risk

Blood potassium and sodium فى حالات اشتباة الضغط الثانوى

Blood uric acid مش اساسى اوى

#Blood creatinine and eGFR

على الاقل كرياتينين (مهم جدا) خلى بالك من دى ،، ممكن يكون ارتفاع الضغط اصلا سببه الكلى من الاول

Urine analysis: microscopic examination; urinary protein by dipstick test

Or, ideally, albumin: creatinine ratio

ده برده مهم لمعرفة HMOD & secondary cause also

#12-lead ECG

طب ايه الفحوصات اللى هتعملها عشان تعرف هل فيه HMOD (TOD) ولا لا ؟

Heart

a 12-lead ECG is recommended for all hypertensive patients.

Echocardiography:

- Is recommended in hypertensive patients when there are ECG abnormalities or signs or symptoms of LV dysfunction.
- May be considered when the detection of LVH may influence treatment decisions.

Blood vessels

#Ultrasound examination of the carotid arteries

- Is recommended only in patients with stroke or TIA مهم جدا

#Measurement of PWV (pulse wave velocity) may be considered for measuring arterial stiffness.

مش متوفره للاسف (مش اساسيه اوى)

Kidney

Measurement of serum creatinine and eGFR is recommended in all hypertensive patients.

اعمل وظائف كلى ولو عاليه غالبا هتحتاج تحسب ال eGFR باى طريقه كانت

#Measurement of urine albumin:

Creatinine ratio is recommended in all hypertensive patients. مهمه

#Renal ultrasound and Doppler examination should be considered in patients with impaired renal function, albuminuria, or for suspected secondary hypertension. مهمه

Eye

Fundoscopy

Is recommended in patients with grades 2 or 3 hypertension and all hypertensive patients with diabetes

- It may be considered in other hypertensive patients.

Brain

In hypertensive patients with neurological symptoms and/or cognitive decline, brain MRI or CT should be considered for detecting brain infarctions, microbleeds

قواعد علاج ارتفاع ضغط الدم طبقا لتوصيات الجمعية الاوروبية لارتفاع ضغط الدم

European Society of Cardiology {ESH}

هتقيس الضغط زي ما ذكرنا قبل كده

ويستحسن يكون التشخيص مبنى على قياسات خارج المستشفى او العياده على مدار اسبوع مع اخذ متوسط الارقام،، ثم وضع الرقم فى **grade**

GRADE	MANAGEMENT
<p>لو لقيت الضغط</p> <p>SBP: 130 - 139</p> <p>DBP: 85 - 89</p> <p>طبعا ده اسمه</p> <p><u>High normal</u></p>	<p>ده يحتاج الى life style measures بدون علاج دوائى،، ولا ينبغى وصف علاج للمريض الا فى حالة انه عنده</p> <p>Very high risk for CVD</p> <p>خصوصا مريض ال CAD وال stroke</p>
<p>لو لقيت الضغط</p> <p>SBP: 140 - 159</p> <p>DBP: 90 - 99</p> <p>ده اسمه</p> <p><u>Grade 1 hypertension</u></p>	<p>Life style measures for 3 - 6 months without drug therapy</p> <p>وبعدين لو ما اتحسنش</p> <p>Start treatment (drug therapy)</p> <p>ولا ينبغى البدء فى العلاج فورا فى هذة الدرجة من المرض الا اذا كان المريض</p> <p>High risk or very high risk for CVD</p> <p>او ببساطه وجود HMOD(TOD)</p> <p>او حسب ال</p> <p>Estimated 10 year risk</p> <p>وطلع اكثر من ٥%</p> <p>ودي ممكن تحسبها ب ال Application</p> <p>Either Score (European) better</p> <p>Or American (Pooled cohort equation)</p> <p>وطبعا لازم تعمل تحليل دهون كامله بالدم وسكر عشان</p> <p>تعرف تحسب الاسكور ده</p> <p>http://www.heartscore.org/</p>

<p>لو لقيت الضغط </p> <p>SBP: 160 - 179</p> <p>DBP: 100 - 109</p> <p>يبقى ده</p> <p><u>Grade 2 hypertension</u></p>	<p>وده بقى بتعالجه ب</p> <p>Life style measures</p> <p>Immediate drug therapy</p> <p>الهدف : هو نزول ضغط الدم للتارجت فى خلال ٣ شهور على الاكثر من العلاج</p>
<p>لو لقيت الضغط </p> <p>SBP \geq 180</p> <p>DBP \geq 110</p> <p>يبقى ده</p> <p><u>Grade 3 Hypertension</u></p>	<p>وده برده محتاج</p> <p>Life style measures</p> <p>Immediate drug therapy</p> <p>Target: to reach the goal within 3 months</p>

ما المقصود بال

Life style intervention (measures)

المقصود بيه تغيير فى نمط الاكل والشرب و ممارسة الرياضة و التوقف عن التدخين و ضبط الوزن

Diet: DASH (dietary approaches to stop hypertension)

- Salt restriction < 5 gm. /day
 - ✪ لا يزيد الملح فى الاكل عن ٥ جم ع مدار ٢٤ ساعه (يدوب محطوط ملح على الاكل المطبوخ لا عطاؤه طعم ،، من غير اضافة ملح على ترابيزة السفره والبعد عن الحوادق والمخللات
 - ✪ الاكثار من اكل الخضروات الطازجه والفواكه و المكسرات والاسماك مع الاقلال من اكل اللحوم الحمراء والدهون
 - ✪ ضبط الوزن بحيث يكون ال BMI اقل من ٣٠ ،، باى وسيلة كانت
 - ✪ ممارسة رياضة المشى على الاقل ٣٠ دقيقه يوميا لمدة ٥ ايام فى الاسبوع
 - ✪ التوقف عن التدخين نهائيا ،، تحت اشراف طبيب متخصص
- Smoking cessation program

ما هو التارجت لنزول الضغط ؟

نزول رقم SBP مبدأئيا لاقل من 140

ثم 

$\leq 130/80$

مع الوقت ولا ينصح بنزول الضغط الى اقل من ٧٠/١٢٠

ما هي الادوية المستخدمة في علاج الضغط؟

☒ Famous drug classes

A: ACEi (Angiotensin Converting enzyme inhibitors)

Or ARBs (Angiotensin II receptor blockers)

B: Beta blockers

C: Calcium Channel blockers

D: Diuretics (mainly thiazide diuretics)

☒ Less common drugs used in the treatment of Hypertension

- Alpha blockers
- K sparing diuretics (anti-aldosterone)
- Loop diuretics

امثله لادوية

I. ACEi (-pril)

- Captopril
 - (capoten 25 & 50) divided dose 2 - 3 times daily
- Enalapril
 - Ezapril 10 mg tab once daily
- lisinopril
 - Zestril 5 & 10 mg once daily
- Ramipril
 - Tritace (2.5, 5 & 10)
- Perindopril
 - coversyl 5 & 10 once daily

☞ S/E:

- Chronic cough
- Angioedema
- Hyperkalemia

☞ CI:

- Bilateral renal artery stenosis
- $K \geq 5.5$



II. ARBs

- Losartan
 - Cozaar 50 & 100 once daily
 - Valsartan
 - Tareg 80, 160 & 320 once daily
 - Candesartan
 - Atacand 8 & 16 mg tab once daily
 - Candalkan 8 & 16
 - Irbesartan
 - Aprovel (150 & 300)
 - X tension (150 & 300) Once daily
 - Olmesartan
 - Erastapex 20 & 40 once daily
- ☞ **S/E & CI** :as ACEi but no cough
- ☞ **Effect on CV risk**: significant reduction in CV risk



III. Beta blockers

☞ Non selective:

- Carvidolol
 - Carvid 25 (divided dose, start by 1/2 every 12 hrs)
- ☞ **S/E**: bronchospasm (most obvious)
- ☞ **C/I**: in asthmatic patients & in combination with Deltiazem & verapamil



☞ Selective:

- Bisoprolol
 - concor 5 & 10 once daily
- Metoprolol
 - Seloken Zoc 100 & 200 once daily
- Nebivolol
 - 5 once daily



- ☞ **Effect on CV risk**: No significant effect on future CV risk, but they are beneficial in CAD

IV. Calcium Channel Blockers (DHP CCB)

- Nifedipine
 - Epilat 10 & 20 retard
- Amlodipine
 - Norvasc 5 & 10
 - Amilo 5 & 10
 - Myodura 5 & 10
 - Windipine 5 & 10

Used as once daily
- Felodipine
 - plendil 5 & 10 once daily
 - ☞ **S/E:** peripheral edema
 - ☞ **Effect on CV risk:** significant reduction in CV risk, also they reduces aortic stiffness & central aortic pressure, so they are used as first line in older patients $\geq 55 - 60$ years



V. Diuretics (thiazide)

Thiazide like diuretics ↷

- Indapamide
 - Natrilix SR tab once daily
- Metolazone
 - Demafight 5 mg (start by 1/2 tab once daily)

N.B:

Thiazide type diuretics like hydrochlorothiazide are not present alone in Egyptian market, but they are available in combinations either with ACEi, ARBs or beta-blockers

S/E: Hyperuricemia & precipitation of acute gouty arthritis (most important)

C/I: in renal insufficiency (GFR < 60 except Metolazone which is safer)

Combinations in a single pill

↪ ACE + Thiazide ↪

- Capozide
(Captopril 50+ hydrochlorothiazid 25)
 - Ezapril Co
(Enalapril 20 + hydrochlorothiazide 12.5)
 - Zestoretic
(Lisinopril 20 + hydrochlorothiazide 12.5)
 - Tritace Comb
(ramipril + HCT) 2.5/12.5 & 5/25
 - Tritace max
(ramipril 10 + HCT 25)
 - Coversyl plus
(Perindopril 10 + indapamide 2.5)
- Used once daily

ميزة الكوفرسيل بلس انه يجمع ما بين

Indapamide (thiazide like diuretic)

+

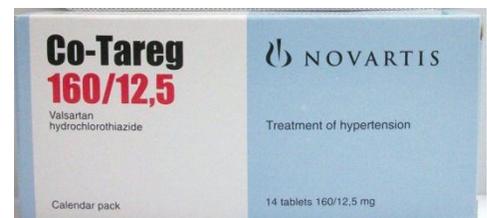
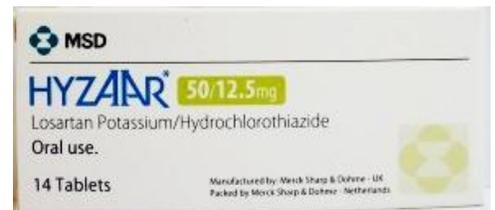
Strong ACEi (perindopril)

وهو البراند كمان

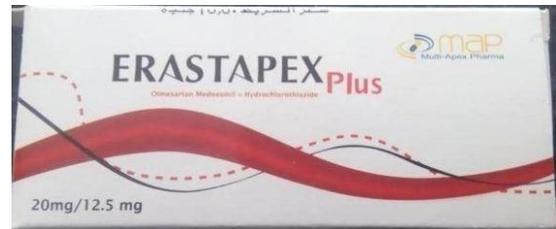
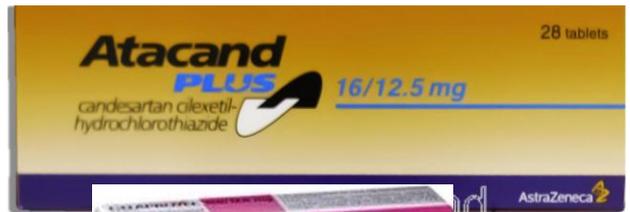


↪ ARBs + thiazide ↪

- Hyzaar
(Losartan + HCT) 50/12.5 & 100/25
- Co - Tareg (Valsartan + HCT)
(80/12.5 & 160/12.5 & 160/25 & 320/12.5 & 320/25)



- Atacand plus
(Candesartan + HCT)
32/12.5 & 16/12.5
- Co-aprovel
(Irbesartan + HCT)
150/12.5 & 300/12.5
- Erastapex plus
(Olmesartan + HCT)
(20/12.5 & 40/12.5)



↪ ACEi + CCB ↪

- Amlodipine + perindopril
 - Coveram tab
(5/10 & 10/10 & 10/5)

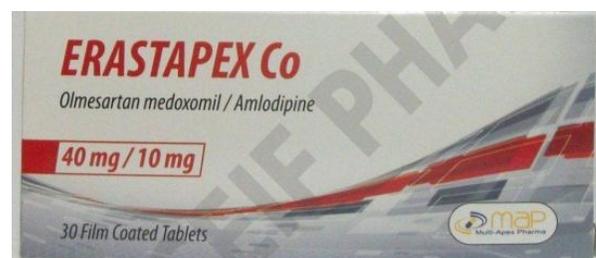


↪ ARBs + CCB ↪

- Amlodipine + Valsartan
 - Exforg tab (5/160 & 10/160)
 - Blokstens (5/160 & 10/160)
 - Avivavasc (5/160 & 10/160)



- Olmesartan + Amlodipine
 - Erastapex Co (20/5 & 40/10 & 40/5)



↪ ARBs + CCB + Thiazide ↪

- Olmesartan + Amlodipine + HCT
 - Erastapex Trio
(20/5/12.5 & 40/10/25)
 - Marvitsense
(20/5/12.5 & 40/10/25) (40/5/12.5 & 40/5/25)



- Amlodipine + Valsartan+ HCT
 - Exforge HCT 5/160/12/5 & 10/160/25



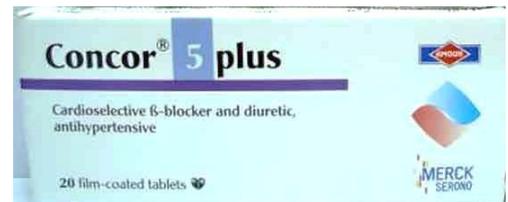
↪ ACEi + CCB + indapamide ↪

- Triplixam
Amlodipine + indapamide + Perindopril
(5/1.25/5 & 10/2.5/5)



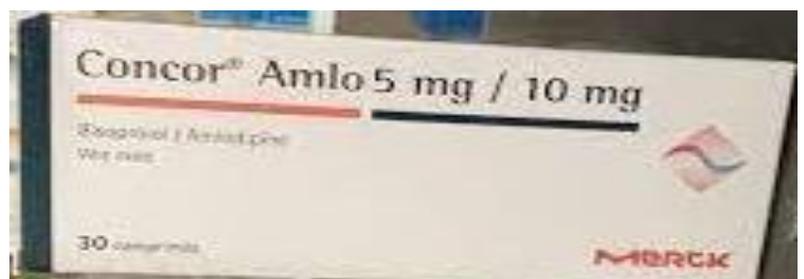
↪ BB + Thiazide ↪

- Concor plus
Bisoprolol + HCT
(5/12.5 & 10/12.5)
- Nevilob plus
Nebivolol + HCT
(5/12.5 & 5/25)



↪ BB + CCB ↪

- Concor amlo
Bisoprolol 5 + Amlodipine 5)



معايير اختيار الادوية المستخدمة في علاج ضغط الدم & استراتيجيات العلاج

هناك ٣ معايير اساسية لاختيار الادوية في علاج مريض الضغط،، بالترتيب (الاكثر اولويه)

المعيار الاول: عدم وجود contraindication لل drug ده ويسمى بال ✓✓✓✓

Compelling contraindications

المعيار الثاني: وجود مرض اخر مع ارتفاع ضغط الدم يعطى اولويه لنوع معين من ال drugs عن غيرها،، لانه بيعالج المرضين في نفس الوقت ويسمى بال

Compelling indication

Or Hypertension with other comorbidities likes ↴↴

- HTN + DM
- HTN + CAD
- HTN + HF
- HTN + AF
- HTN + CKD

المعيار الاخير: اذا كان المريض مصاب بارتفاع ضغط الدم فقط ولا يوجد another comorbidity

هتبدأ بأى نوع من المجموعات الاساسيه؟؟

ده هيتوقف على سن المريض،، وتأثير الدواء على المدى البعيد في منع ال future CV risk

Compelling Contraindications

↴ هنا خلاصها في الجدول ده

Drug	Contraindications	
	Compelling	Possible
Diuretics (thiazides/thiazide-like, e.g. chlorthalidone and indapamide)	<ul style="list-style-type: none"> ● Gout 	<ul style="list-style-type: none"> ● Metabolic syndrome ● Glucose intolerance ● Pregnancy ● Hypercalcaemia ● Hypokalaemia
Beta-blockers	<ul style="list-style-type: none"> ● Asthma ● Any high-grade sinoatrial or atrioventricular block ● Bradycardia (heart rate <60 beats per min) 	<ul style="list-style-type: none"> ● Metabolic syndrome ● Glucose intolerance ● Athletes and physically active patients
Calcium antagonists (dihydropyridines)		<ul style="list-style-type: none"> ● Tachyarrhythmia ● Heart failure (HFrEF, class III or IV) ● Pre-existing severe leg oedema
Calcium antagonists (verapamil, diltiazem)	<ul style="list-style-type: none"> ● Any high-grade sinoatrial or atrioventricular block ● Severe LV dysfunction (LV ejection fraction <40%) ● Bradycardia (heart rate <60 beats per min) 	<ul style="list-style-type: none"> ● Constipation
ACE inhibitors	<ul style="list-style-type: none"> ● Pregnancy ● Previous angioneurotic oedema ● Hyperkalaemia (potassium >5.5 mmol/L) ● Bilateral renal artery stenosis 	<ul style="list-style-type: none"> ● Women of child-bearing potential without reliable contraception
ARBs	<ul style="list-style-type: none"> ● Pregnancy ● Hyperkalaemia (potassium >5.5 mmol/L) ● Bilateral renal artery stenosis 	<ul style="list-style-type: none"> ● Women of child-bearing potential without reliable contraception

ملحوظه هالاهمه جدا :

من اشهر ال Compelling contraindications

هي عدم استعمال ال BB في علاج ارتفاع ضغط الدم في مرضى الحساسيه والربو الشعبي ، حتى لو مريض الربو

Controlled with no wheezy chest,

Because BB will induce bronchospasm even if they are selective

بعد ما تستبعد ال Compelling contraindications

كما هو موضح في الجدول السابق

الجدول من ال (ESH guidance 2018)

هتبقى الخطوه الثانيه ان حضرتك تسأل في الهستورى (past history) عن كل الامراض المزمنه اللي بيتعالج منها المريض الى جانب ارتفاع ضغط الدم

لو لقيت ان المريض عنده

I. Coronary artery disease (CAD) also known as stable ischemic heart disease (IHD) + HTN

الخطوه الاولى: هتبدأ مع المريض مبدأئيا ب

☆ Combination in a Single pill (SPC)

Three Options ↷

1) ACEi or ARBs & BB or CCB

Ex: start initially by

Tritace 1.25 once + Concor 5 once

Or Tareg 80 once + Seloken 100 once

Or Avivavasc 5/160

N.B:

Starting with BB in combination is better than CCB with ACEi or ARBs comonation in CAD

2) CCB + diuretic or BB

Ex:

Windipine 5 once + Natrilix once

Or Plendil 5 once + Nevilob 5 once

N.B:

Non dehydro pyridine CCB like deltiazem is more potent than DHP CCB in CAD, and they can be used instead of DHP CCB if the Patient has CAD + HTN , but deltiazem and verapamil are contraindicated to be used in combination with BBs

3) BB + diuretic

Ex:

Concor 5 plus once initially

Or Nevilob plus (5/12.5 once initially)

الخطوة الثانية :

لو المريض اللي عنده HTN + CAD ،، ضغطه ما اتضبش (لم يصل الى التارجت وهو اقل من ١٣٠/٨٠) فى خلال ٣ شهور من بدأ ال regimen ،، هتضطر تدى

❖ Combination composed of 3 agents

BB + ACEi or ARBs + thiazide

Or CCB (Altiazem) + ACEi or ARBs + thiazide

N.B:

Deltiazem (trade name altiazem 60 mg tab used 2 - 3 times per day)

الخطوة الثالثة :

لو المريض ما اتضبش خلال ٣ شهور على three agent's combinations فى مريض الضغط المصاحب ب CAD هيطلق عليه **Resistant HTN** وهتضطر تضيف عليهم

Spirolactine (spectone) 25(1 - 2 tab/day)

Or other loop diuretics

Torseamide 10 mg (Torsoretic 10) once

ملحوظه (١)

فى مريض الضغط المصاب بقصور الشريان التاجى CAD ،، غالبا ما هتبدأ ب combination زى ما ذكرنا فوق ،، بنفس الخطوات ،، ولا ينبغى اعطاء المريض single agent او monotherapy الا اذا كان ضغط المريض SBP لا يتعدى ١٥٠ ،، او سنه اكبر من ٨٠ سنه ،، ساعتها هتبدأ بنوع واحد فقط ويفضل ان يكون BB

ملحوظه (٢)

لو كان مريض ال CAD

Very high risk

زى مريض ال CAD اللي جاله

Previous MI and had PH of multiple CV events or underwent coronary angioplasty or CABG

هتبدأ تعالج الضغط وهو لسه

High normal (SBP \geq 130)

ملحوظه (٣)

فى مريض الضغط اللي عنده تاريخ مرضى ب old MI ،، لابد وان تكون

BB + RAS blockers (RAS blockers \Rightarrow ACEi or ARBs)

مكونات اساسيه فى علاج هذا المريض اذا لم يكون هناك موانع لاستخدامهم

II. Drug- treatment strategy of HTN and DM

→ Indicated when the BP > 140/90

Step 1

→ Initiate combination of ↪

RAS blockers (ACEi or ARBs) + CCB

Or ACEi or ARBs + Thiazide /thiazide like diuretic

If BP doesn't reach goal go to



Step 2

→ Give triple combination of ↪

ACEi or ARBs + CCB + Thiazide

Target BP ≤ 130/80, but SBP not below 120 & DBP: not below 70

▶ If age ≥ 65 years: target SBP: 130 - 139

ملحوظه هالامه : ممنوع اعطاء

ACEi + ARBs (risk of hyperkalemia)

III. Drug- treatment strategy for HTN and Heart failure with reduced Ejection Fraction (HFrEF)

Initial step:

ACEi or ARBs+ thiazide diuretic (or loop diuretic) + Beta blockers

For at least 3 months, if the BP reaches the goal ≤ 130/80 go to



Step 2

Continue the above combination and add MRA (spironolactone)

IV. Drug- treatment strategy of hypertensive patients With LVH

➡ start with combination of

RAS blockers (ACEi or ARBs)

+ CCB or Diuretic

Target SBP: 120 - 130

V. Drug- treatment strategy for HTN and AF

Step 1

➡ Dual combination of ↷

ACEi or ARBs + BB

Or

BB + CCB

➡ After 3 months, if BP doesn't reach the

Target \leq 130/80 go to



Step 2

➡ Triple combination of ↷

ACEi or ARBs + BB + DHP (CCB)

Or

BB + DHP CCB + thiazide diuretics

N.B:

DHP CCB means (dehydro-pyridine Calcium channel blockers)

Ex: Amlodipine (Norvasc)

While

NDHP CCB (Non dehydropyridine CCB)

Ex: deliazem (Altiazem) and Verapamil (isoptin)

VI. Drug- treatment strategy of HTN and CKD

→ Initial therapy (dual combination) of ↷

ACEi or ARBs + DHP CCB

Or

ACEi or ARBs + diuretic (or loop diuretic)

→ If BP doesn't reach the target within 3 months



Give → Triple combination of ↷

ACEi or ARBs + CCB + diuretics

→ If BP doesn't reach the target, it is considered " **Resistant Hypertension** "



Give → The previous triple combination

+

Spironolactone (25 - 50) once

Or other diuretics

Or alpha blockers (minipress or Cardura) or BB

N.B:

Diuretic means Thiazide

Other diuretic means loop diuretic as Lasix 500 (begin with 1/4 tab once)

Or Torsoretic (Torsemide)

ملحوظه هالامه :

فى مرضى ارتفاع ضغط الدم المصاحب بقصور فى وظائف الكلى ،، من المتوقع انخفاض بسيط فى قيمة ال eGFR والذى يقابله ارتفاع بسيط فى قيمة الكرياتينين لا يزيد ابدا فى اى حال من الاحوال عن ٣٠٪ ،،

ولكن اذا زاد عن هذه النسبه المحدده ،، فيجب استبعاد ال

Renovascular HTN or Renal artery Stenosis

ولذلك ،، لابد من متابعة وظائف الكلى مع متابعة نسبة البوتاسيوم ايضا بحيث لا يزيد عن ٥,٥

VII. Drug- treatment strategy of HTN in pregnancy

➔ In Gestational HTN or pre-existing HTN, superimposed, treatment is indicated when the BP \geq 140/90

➔ Methyldopa, Labetalol and Calcium channel blockers are the drugs that are safe and recommended to control BP in pregnancy

- Methyldopa --> Aldomet 250 (begin with 1 tab \times 3)
- Labetalol --> Labipress (begin with labipress 100 /12 hrs.
- CCB (nifedipine & Amlodipine but Nifedipine (Epilat is better)

Begin with Epilat 10 mg /12 hrs

ملحوظه ١ :

نبدأ بواحد فقط من هذه الادويه ،، واذا لم يصل الضغط الى التارجت بالرغم من رفع الجرعه نضيف التانى والثالث وهكذا
لحين ضبط الضغط

☞ Labetalol is the drug of choice & first line according to the NICE (UK) guidelines

ملحوظه ٢ :

ممنوع منعاً باتاً استخدام ال

RAS blockers (ACEi or ARBs) in pregnancy or even in the hypertensive female patient who is planning to get pregnant

VIII. Drug- treatment strategy of HTN without co-morbidities and without complication

طبعاً ده بنشوفه كثير ،، وده فيه اكثر من مدرسه سواء كانت قديمه او حديثه ،، والسبب في كده ان الحاله دي مفيهاش

Compelling indications

وبالتالى هيكون قدامى كل ال ↓↓↓↓↓

Major classes of drugs

وهاضطر اختار واحد منهم عشان ابدأ بيه ،،

طب يا ترى معايير الاختيار دي بناء على ايه!!

Three concepts ↗

A) Effect of anti-hypertensive on future cardiovascular risk

I.e. does the drug decreases the risk or not?

يبقى لازم تعرف الادويه اللي بتقلل ال TOD على المدى البعيد ↗

★ Groups of medications that decrease the future cardiovascular risk and HMOD (TOD)

- RAS blockers (ACEi and ARBS)
- CCB
- Thiazide diuretics

N.B:

★ BBs have low efficacy in decreasing CV risk, so this group is excluded as the first line, and even second and third lines

نخلى بالننا اوووى عشان في مصر ،، هناك استخدام شائع جدااا لل BB كاول دواء الجأ ليه في علاج الضغط

★ Other classes such as Alpha blockers , methyldopa , loop diuretics , spironolactone are also out of algorithm for management of Uncomplicated HTN without comorbidities , they are only used if the hypertension is resistant

★ **Resistant HTN** means: BP is still uncontrolled (\geq target goal 140/90) Despite use of 3 agents including thiazide diuretic.

B) Long term effect of medication on CV risk in relation to age & race

وده معناه ان هناك ادويه مناسبه لمريض الضغط اللى سنه صغير اكثر من الادويه التانيه ،، عشان كده هابدأ بيها معاه ،، وفى ادويه مناسبه للسن الكبير عشان كده هابدأ بيها مع المريض الكبير

Ex 1: RAS blockers are the first line treatment in young patients < 55 - 60 years, but they are weak in black patients because of low renin

EX 2 : CCBs are the first line treatment in old people ($\geq 55 - 60$ years) , as CCB decreases central aortic pressure related to arterial stiffness which is present in old people due to significant atherosclerosis in comparison to young people < 55 years

C)

ودى اخر حاجه توصلت ليها الدراسات ،، وهيا ان معظم مرضى الضغط ،، ضغطهم مش هيتضبط على

One agent or monotherapy

لو تعدى رقم ال SBP = 150 ،،

عشان كده لازم هنبدأ

Combination from the start if SBP is ≥ 150

وده طبقا لل last updated ESH/ESC guidance

وهنلجا لل monotherapy فقط لو الضغط كان اقل من ١٥٠ ... (SBP)

عشان كده هنلخص برتوكول العلاج طبقا لل

★ Last updated ESH/ESC guidelines 2018

→ If SBP < 150, begin with one agent (monotherapy)

- ACEi or ARBs if the patient's age is < 55
- CCB if the patient's age ≥ 55 or black race

→ If SBP is ≥ 150

Step 1

▶ Initial therapy (dual combination) of ↪

ACEi or ARBs + CCB or Thiazide "One pill"

→ After 3 months, if the BP is still above the target go to ↪

(N.B the target is < 140/90 initially then < 130/80)



Step 2

Triple combination of ↪

ACEi or ARBs + CCB + thiazide "One pill"

➔ After 3 months, if the BP is still above the target ↪



Step 3

Triple combination + Spironolactone or other drug

RESISTANT طبعا خطوه ٣ دى معناها ان الضغط اصبح

➔ Add one of the following

Spironolactone (Spectone 25 - 50 once

Or BB

Or Alpha blockers

Or Loop diuretic

ملحوظه هالامه ١

ما زالت ال

NICE (UK) guidelines

بتبدأ ب Monotherapy

مع مريض الضغط حتى لو ضغطه SBP تعدى ال ١٥٠

ولو ما اتظبطش بتزود نوع تانى ثم تالت وهكذا

ملحوظه هالامه ٢

الجايد لاينز الامريكىه JNC8 و اخر update ليها فى ٢٠١٤ ،،

قالوا انك ممكن تبدا combination لو الضغط اكثر من او يساوى ١٦٠/١٠٠

لكن احنا ماشيين على بروتوكول الجمعيه الاوربيه لضغط الدم والقلب ESH/ESC