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The Seventh Report of the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) has recently came to light in a short version. A complete version will soon be available. JNC 7 is the last attempt to bridge the big gap between the current availability of potent and well tolerated antihypertensive strategies and their poor implementation in the clinical practice. Some new and important features characterize the JNC 7 document. The aim of the new and challenging definition of «pre-hypertension» (BP 120-139/80-89 mmHg) is to sensitize the general population and health professionals to implement effective strategies for a healthier life in order to prevent hypertension and related cardiovascular disease as early as possible. Stage 3 hypertension has been deleted and merged with stage 2 (systolic $\geq 160$ or diastolic $\geq 100$ mmHg). BP levels to achieve with treatment («goals») are $< 140/90$ mmHg ($< 130/80$ mmHg in diabetics). To reach the goal, diuretics are recommended for initial treatment «in most subjects with stage 1 hypertension». However, combination of at least 2 drugs is recommended if initial BP is $20/10$ mmHg higher than goal BP. Apart from the definition of pre-hypertension and the advice to begin therapy with diuretics in most patients with stage 1 hypertension, JNC 7 shares several positions with the hypertension guidelines recently released by the European Society of Cardiology and European Society of Hypertension. JNC 7 seems to dedicate limited space to stratify the level of cardiovascular risk in the individual subjects on the basis of the different combinations between BP levels and concomitant risk factors. In summary, JNC 7 is an updated and well equipped arsenal of formidable weapons against hypertension and its complications. The stage is now set for an hard task: their effective implementation in the clinical practice with the aim to decrease cardiovascular morbidity and mortality.


Séptimo informe del Joint National Committee para la Prevención, Detección, Evaluación y Tratamiento de la Hipertensión Arterial: el armamento está a punto

Recientemente se ha publicado una versión abreviada del Séptimo Informe del Joint National Committee para la Prevención, Detección, Evaluación y Tratamiento de la Hipertensión Arterial: el armamento está a punto. El JNC 7 es el último intento de eliminar la gran distancia que existe entre las estrategias antihipertensivas actuales, potentes y bien toleradas, y su escasa implementación en la práctica clínica. El documento JNC 7 contiene algunos datos nuevos e importantes. El objetivo de la definición del nuevo concepto de «prehipertensión» (presión arterial [PA], 120-139/80-89 mmHg) es la de sensibilizar a la población general y a los profesionales sanitarios para que apliquen, lo antes posible, estrategias efectivas dirigidas hacia una vida más sana a través de la prevención de la hipertensión y de la enfermedad cardiovascular relacionada con ésta. Se ha eliminado la hipertensión de fase 3 y se ha fusionado con la de fase 2 (presión sistólica $\geq 160$ mmHg o presión diastólica $> 100$ mmHg). Los valores de PA a alcanzar con el tratamiento («PA objetivo») son los $< 140/90$ mmHg ($< 130/80$ mmHg en los diabéticos). Para conseguirlo, se recomiendan como tratamiento inicial los diuréticos «en la mayor parte de las personas con hipertensión en fase 1». Sin embargo, cuando la PA inicial es 20/10 mmHg superior a la PA objetiva, se recomienda el tratamiento de combinación con al menos 2 fármacos. Además de la definición de prehipertensión y de la recomendación de iniciar el tratamiento con diuréticos en la mayor parte de los pacientes con hipertensión en fase 1, el JNC 7 contiene diversas recomendaciones relativas a la hipertensión que han sido propuestas recientemente por la European Society of Cardiology y por la European Society of Hypertension. En el JNC 7 se dedica un espacio limitado a la estratificación del valor de riesgo cardiovascular en los pacientes, según diferentes combinaciones entre los valores de la PA y los factores de riesgo concomitantes. En resumen, el JNC 7 es un arsenal actualizado y bien equipado de armas extraordinarias frente a la hipertensión y sus complicaciones. Ahora queda por hacer lo más difícil: su implementación efectiva en la práctica clínica con el objetivo de disminuir la morbilidad y la mortalidad cardiovasculares.
**INTRODUCCIÓN**


La séptima reporte del Comité Nacional Conjunto para la Prevención, Detección, Evaluación y Tratamiento de la Presión Arterial Alta (JNC 7), coordinado por el Instituto Nacional del corazón, la sangre y la enfermedad vascular cerebral, ha salido recientemente en una versión corta y se publicará pronto una versión más completa. JNC 7 es un gran desafío, más allá de la superficie. Esencialmente, es el último gran esfuerzo y el intento de llenar el vacío entre la alta disponibilidad de potentes, pruebas satisfactorias y tolerables estrategias antihipertensivas y su implementación inadecuada en la práctica clínica.

Several parts of the JNC 7 document resemble prior JNC reports. However, some crucial points of the JNC 7 report deserve mention and even some criticism.

**PRE-HYPERTENSION**

Estudios con presión arterial sistólica 120-139 mm Hg o diastólica 80-89 mm Hg (el primero de presión arterial normal) son ahora etiquetados como“,pre-hypertensives” (Figura 1). Incongruentemente, el paciente saludable de 19 años que mantiene una PA persistente 120/80 mm Hg no estaría considerado como “normal,” pero, “pre-hypertensive.” El concepto de “pre-hypertension” surge del bien establecido de evidencia de una relación linear, graduada y continua entre PA y riesgo cardiovascular sin evidencia de un umbral para valores de 115/75 mm Hg. 3 También se extrae de la evidencia Framingham de que la PA normal (130-139 mm Hg sistólica o 85-89 mm Hg diastólica) está asociada con un riesgo mayor de enfermedad cardiovascular y futuro hipertensión. 3 En el juicio de expertos JNC 7, el enfoque de “pre-hypertension” está claramente dirigido a sensibilizar a la población general y los profesionales de la salud para implementar efectivas y sostenibles estrategias para una vida más saludable (prevenir o dejar de fumar, prevenir o tratar la obesidad, actividad física, etc.). Sin embargo, en el juicio de los críticos, “pre-hypertension” puede ser visto como una definición innecesaria de “nearly disease” en sujetos completamente sanos, lo que podría generar ansiedad, ansiedad y depresión, con posibles influencias en el ambiente laboral y familiar. Just to make a comparison with a similar document, the recent European Society of Cardiology/European Society of Hypertension (ESC/ESH) guidelines maintain the prior classification of normotension (systolic BP 120-129 mm Hg and diastolic BP 80-84 mm Hg) and high-normal BP (systolic BP 130-139 or diastolic BP 85-89 mm Hg). Probably, the term pre-hypertension would have been more acceptable if limited to subjects with high-normal BP.

**STAGES 1 AND 2 ONLY**

Stage 3 has been eliminated because the therapeutic strategies in stage 2 and 3 are essentially the same. Therefore, all subjects with systolic BP ≥160 mm Hg or diastolic BP ≥100 mm Hg now belong to stage 2, which is the highest stage. By contrast, the ESC/ESH guidelines maintain grade 2 (systolic 160-179 or diastolic 100-109 mm Hg) and grade 3 (systolic ≥180 or diastolic ≥110 mm Hg).

**Table 1. Classification of hypertension according to the Joint National Committee on the Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7)2 guidelines and the European Society of Cardiology/European Society of Hypertension (ESC/ESH) guidelines6**

<table>
<thead>
<tr>
<th>JNC VII</th>
<th>Systolic (mm Hg)</th>
<th>Diastolic (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;120</td>
<td>&lt;80</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>120-139</td>
<td>80-89</td>
</tr>
<tr>
<td>Hypertension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stage I</td>
<td>140-159</td>
<td>90-99</td>
</tr>
<tr>
<td>Stage II</td>
<td>≥160</td>
<td>≥100</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ESC/ESH 2003</th>
<th>Systolic (mm Hg)</th>
<th>Diastolic (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>120-129</td>
<td>80-84</td>
</tr>
<tr>
<td>High normal</td>
<td>130-139</td>
<td>85-89</td>
</tr>
<tr>
<td>Grade I</td>
<td>140-159</td>
<td>90-99</td>
</tr>
<tr>
<td>Grade II</td>
<td>160-179</td>
<td>100-109</td>
</tr>
<tr>
<td>Grade III</td>
<td>≥180</td>
<td>≥110</td>
</tr>
</tbody>
</table>
ROLE OF SYSTOLIC BP

JNC 7 recognizes that systolic BP is more important than diastolic BP as a cardiovascular risk factor, except perhaps in younger subjects. Progressive stiffening of large arteries is believed to be an important basic mechanism of the rise progressive in systolic and decrease in diastolic BP after age 55, with consequent widening of pulse pressure (PP) with age.7,8 A wide PP may thus reflect already diseased arteries, with adverse prognostic implications.7,8 In cross-sectional studies, PP showed a strong direct association with carotid atherosclerosis, left ventricular mass and white matter lesions detected by magnetic resonance imaging.9,11 From a prognostic standpoint, an association has been noted in several studies between PP and risk of cardiovascular morbidity in different clinical settings and such association was independent of systolic and diastolic BP.5,12,13 Unfortunately, systolic BP control is more difficult to achieve than diastolic control, particularly in the elderly.

CARDIOVASCULAR RISK FACTORS

JNC 7 list several well established cardiovascular risk factors, which include also microalbuminuria or estimated glomerular filtration rate <60 ml/min. The statement is correct in view of the extensive evidence on the independent prognostic impact of microalbuminuria in patients with hypertension.5,16 However, at least in the short version published in JAMA,1 little effort seems devoted to define the level of cardiovascular risk in the individual subject (risk stratification) on the basis of the different combinations between BP levels and concomitant risk factors. In contrast, the ESC/ESH document6 defines 5 levels of risk (average risk, low-added risk, moderate added risk, high added risk and very high added risk) on the basis of such combinations. For example, subjects with stage I hypertension would be at low-added risk in the presence of no other risk factors, moderate added risk in the presence of 1-2 other risk factors, high added risk in the presence of 3 or more risk factors, diabetes or target organ damage, or very high added risk in case of associated clinical condition (prior stroke, TIAs, coronary artery disease, peripheral vascular disease or retinopathy stage III or IV). As discussed below, implications for treatment seems to be scarcely dependent on concomitant risk factors (apart from the case of diabetes) and mostly oriented on BP levels.

WHO NEEDS ANTIHYPERTENSIVE DRUGS

Subjects «not at goal» with lifestyle modifications should begin drug treatment. Goal means <140/90 mm Hg, with the notable exception of <130/80 in diabetics. Fortunately, the ESC/ESH document endorses exactly the same goals. Of note, JNC 7 recommends drug treatment in non diabetic subjects with systolic BP ≥ 140 mm Hg or diastolic BP ≥ 90 mm Hg despite lifestyle modifications even in the complete absence of concomitant risk factors, as well as in the presence of of only 1-2 risk factors. This sounds like a quite liberal approach to drug treatment. By contrast, the ESC/ESH document looks a bit more restrictive, by recommending drug treatment in subjects not at goal after at least 3 months of life-style measures in case of moderate added risk (1-2 risk factors in grade 1 hypertension, 0-2 risk factors in grade 2 hypertension), or not at goal after 3-12 months of life style measures in case of low risk (no risk factors in grade 1 hypertension).

WHICH DRUGS?

This is a crucial point. JNC 7 seems to be quite drastic on the surface, but a careful inspection of the entire document reveals flexibility. JNC 7 simply states that in subjects with stage I hypertension, thiazide diuretics should be used «as initial therapy for most patients with hypertension.» The rationale for such position comes from the low cost of diuretics and the evidence that «in most outcome trials including the recently published Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT), diuretics have been virtually unsurpassed in preventing the cardiovascular complications of hypertension.» Critics may argue that «unsurpassed» does not mean «superior» and that the ALLHAT trials has several methodological shortcomings.17,18 An important shortcoming of ALLHAT was the forced association, by protocol, of lisinopril with atenolol, instead of a diuretic or a dihydropiridine calcium-antagonist (the usual choice in the clinical practice), in subjects resistant to monotherapy. Such policy inevitably led to favor chlorthalidone (which could add atenolol in a pharmacologically appropriate combination) and to punish lisinopril.

At variance with JNC7, the ESC/ESH document considers diuretics, beta-blockers, ACE-inhibitors, calcium antagonists and angiotensin II blockers as suitable drugs for the initiation and maintenance of therapy.6 Such a position is based on the lack of evidence of a clear superiority of one single class versus another in the major outcome trials. Notably, the ESC/ESH document adds the statement (box 11) that the choice of drugs will be influenced by many factors including the «cost of drugs.» Thus, the acute physician may interpret such a position (lack of superiority of one class versus another and cost of drug to be taken into account) as very similar, in its essential substance, to that expressed by the JNC 7 document in support of diuretics as first line agents.

Beyond the points of pre-hypertension and initial therapy with diuretics, JNC 7 and ESC/ESH show an
apparent agreement over several points. Both recognize that combinations between two or more drugs are needed to normalize blood pressure in many patients. Here, JNC 7 introduces objective criteria by stating that if pre-treatment BP is >20/10 mm Hg above the goal, consideration should be given to begin treatment with 2 agents. Thus, JNC 7 clearly suggests that in all non-diabetic subjects with BP>160 mm Hg systolic or 100 mm Hg diastolic (as well as in diabetics with BP>150 mm Hg systolic or 90 mm Hg diastolic) treatment should begin with 2 drugs.

Another important area of substantial agreement between the JNC 7 and ESC/ESH guidelines regards the preferential indication for specific drugs even for initial therapy. As shown in figure 2, the «compelling indications» for specific antihypertensive drug mentioned by JNC 7 are not substantially dissimilar from the «conditions favoring the use» of specific drugs mentioned in the ESC/ESH document.

From a purely scientific, and not diplomatic, perspective, it is encouraging to realize that most positions on the diagnosis and treatment of patients with hypertension are not substantially different on the two sides of the ocean.

In conclusion, JNC 7 is an updated and well equipped arsenal of formidable weapons against hypertension and its complications. The stage is now set for a hard task: their effective implementation in the clinical practice.

**REFERENCES**