



HIPERTENSION ARTERIAL Y DIABETES MELLITUS SU DETECCION Y MANEJO EN LA POBLACION MEXICANA

HYPERTENSION AND DIABETES MELLITUS SCREENING AND TRETAMENT IN THE MEXICAN POPULATION

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Hypertension

- *Comments: Hypertension, like other cardiovascular illnesses, is a chronic disease that is the number one cause of death worldwide.*
Cardiovascular diseases are considered an important threat to public health.

Las peores epidemias

The worst epidemics

- ✓ Peste bubónica: año 1600
The bubonic plague in the 1600's
- ✓ Influenza: año 1919
The Flu in 1919
- ✓ Sida: década 1990
AIDS in the 90's
- ✓ ECNT (HTA, DM, IRC): siglo XXI
Non-transmissible chronic diseases
(Hypertension, Diabetes Mellitus, Kidney Failure): The XXI Century

Comments: Humanity has faced many epidemics that were considered to be the worst kind due to their impact. In the XXI century, the continuous increase of the prevalence of non-transmittable chronic diseases, has become, in our current days, an epidemic. Cardiovascular diseases are estimated to be the main cause of death by the year 2020.

Magnitud del problema

The magnitude of the problem

- 600 millones de hipertensos a nivel mundial

600 million people suffer from hypertension worldwide

- 70% (420 millones) corresponden a países en vías de desarrollo

70% (420 million) are in developing countries

- Mortalidad: a nivel mundial (15 millones por año)

Mortality: 15 million per year worldwide

- Gran número de discapacitados: EVC, IAM, ICC, IRC, EAP

A great number of people with disabilities: Cerebral Vascular Event, Myocardial infarction, Congestive Heart Failure, Kidney Failure, Peripheral Arterial Disease.

REPERCUSIÓN DE LA HTA

The impact of Hypertension

■ Estudio Framingham:

- 70 % de los infartos cerebrales.
- Muertes por enfermedad cardiovascular: 37 % en hombres y 51 % en mujeres.
- Los hipertensos padecen más que los normotensos:

- 2 veces EAP.
- 3 veces CI.
- 4 veces ICC.
- 7 veces infarto cerebral.

The Framingham Heart Study:

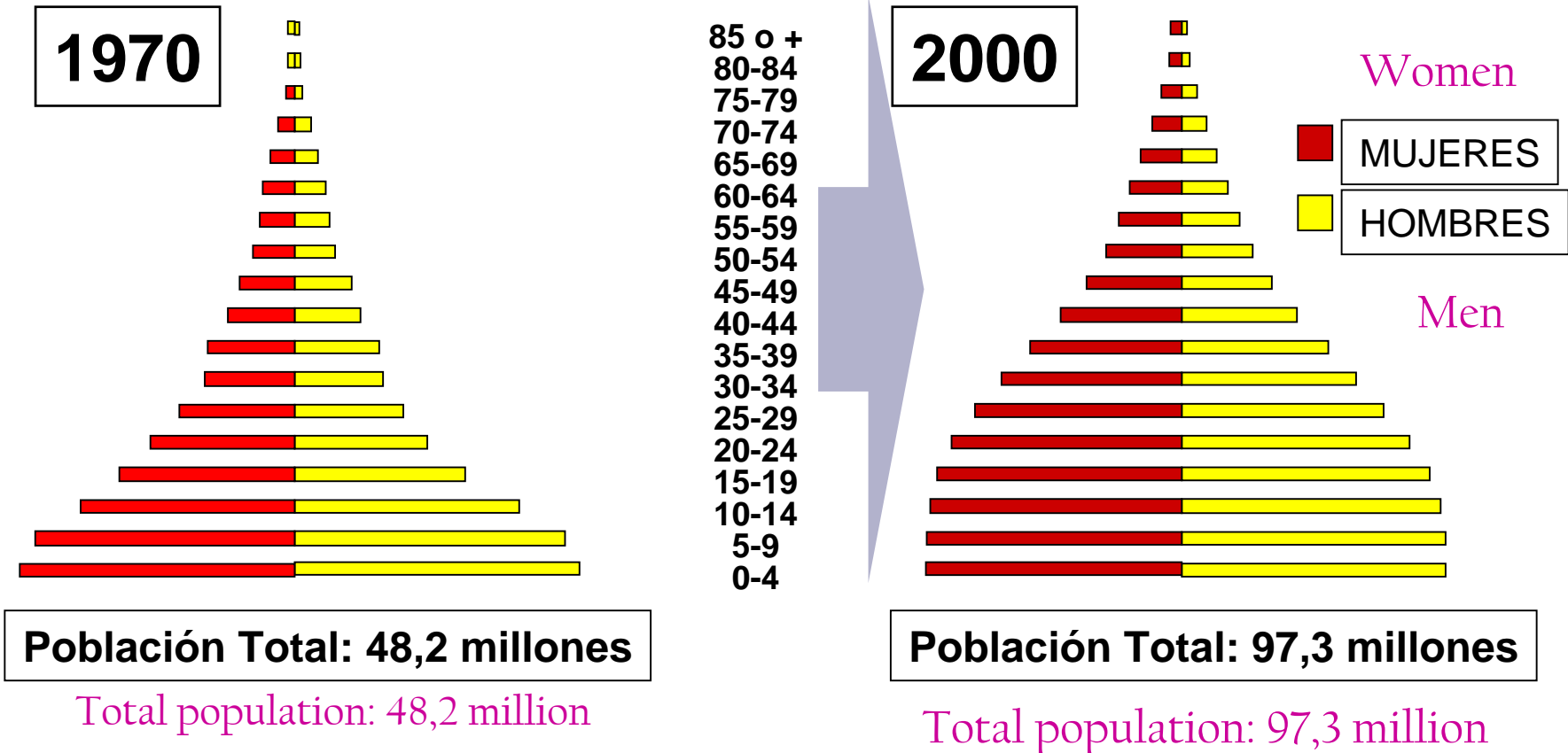
- 70 % of Cerebral infarctions
- Death due to Cardiovascular Diseases:
37 % in men y 51 % in women.
- Hypertensive patients suffer more than the normotensive patients:
 - 2 times more Peripheral Arterial Disease.
 - 3 times more Ischemic Cardiopathy
 - 4 times more Congestive Heart Failure.
 - 7 times more Cerebral Infarct.

The Repercussion of Hypertension

- *Comments: Hypertensive patients are 7 times more likely to develop a Cardiovascular Event and 3 times more likely to develop a Myocardial Infarction*

Transición Demográfica

Demographic Transition



La población se duplicó en los últimos 30 años

The population doubled in the last 30 years

Demographic Transition

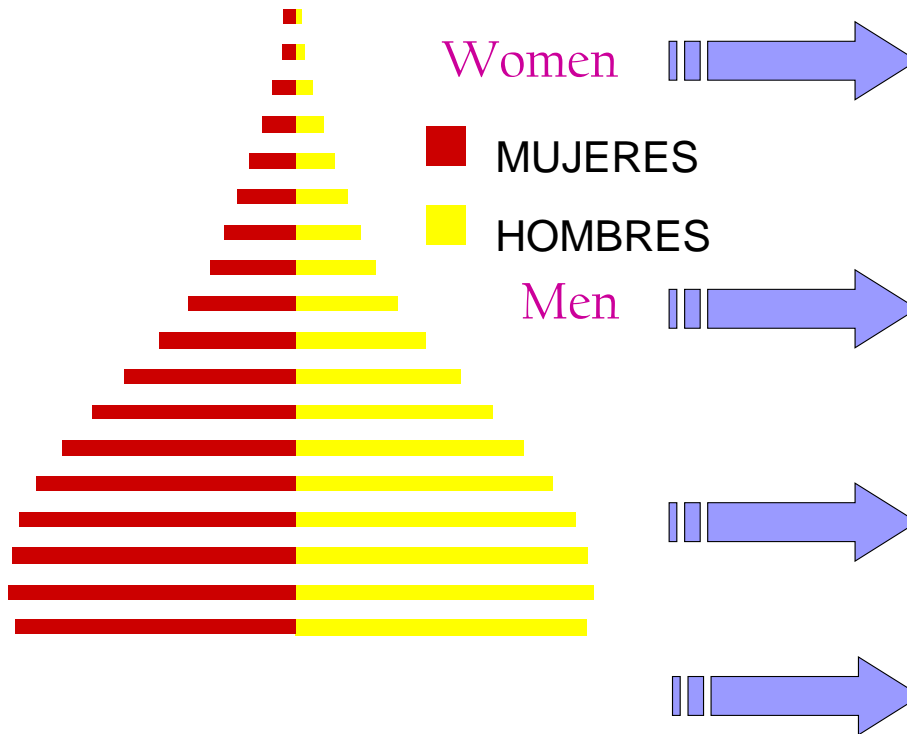
- *Comments: Due to its intermediate economy, Mexico is going through a phase of multiple transitions. The demographic transition has seen changes in its population structure, culture, and lifestyle.*

Transición demográfica, consideraciones en salud 2000

Demographic Transition, consequences in health 2000

2000

85 o +
80-84
75-79
70-74
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
10-14
5-9
0-4



Rápido crecimiento en población de la tercera edad.

Rapid growth of the senior population.

Población femenina de rápido crecimiento en los grupos de 40 años y más.

Rapid growth of the female population in groups of 40 or older.

Grupo poblacional mayoritario transitando entre los 15 y 24 años.

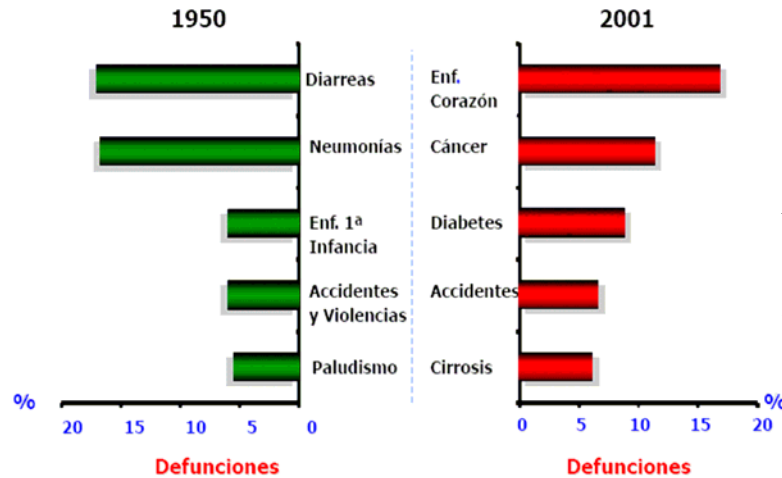
The age group with more representation is between the ages of 15 and 24

Crecimiento de la población por nacimientos alrededor de 2 millones por año

The population growth due to the birthrate of 2 million per year.

Transición epidemiológica

Epidemiological Transition



Comments: The main cause of mortality in past decades was due to infectious diseases. Results from the last National Health Census of 2001, shows that Cardiovascular Diseases are the number one cause of death in Mexico.

Las cinco principales causa de muerte en México

The five main causes of Death in Mexico

1950

2001

Diarrhea
Pneumonia
Childhood diseases
Accidents and violence
Malaria

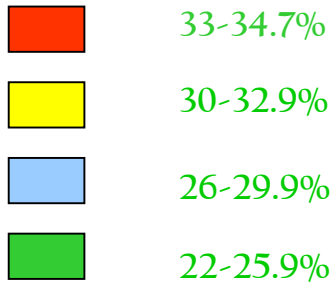
Heart Diseases
Cancer
Diabetes
Accidents
Cirrhosis

Prevalencia Nacional

30.05%

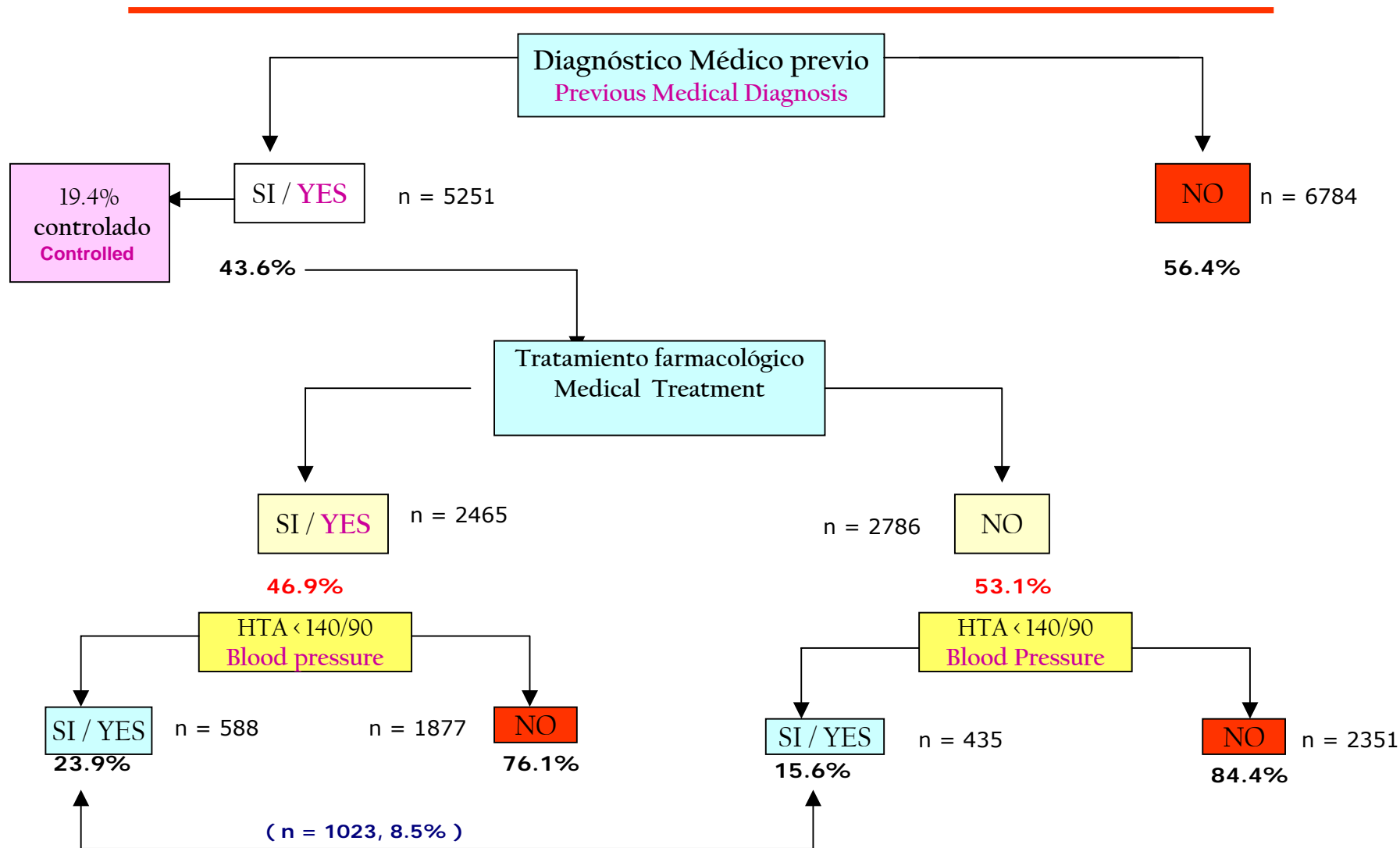
National Prevalence

30.05%



Comments: The prevalence of Hypertension in the Mexican Population is estimated as 30.05% according to the National Health Census of 2000. This disease is mainly seen in the north region of Mexico where the prevalence is directly associated with age. The prevalence of hypertension was greater in the female population of 50 or older.

Total de pacientes con Hipertensión, ENSA 2000
12,035 (30.05%)
Total number of patients with Hypertension, ENSA 200
12,035 (30.05%)



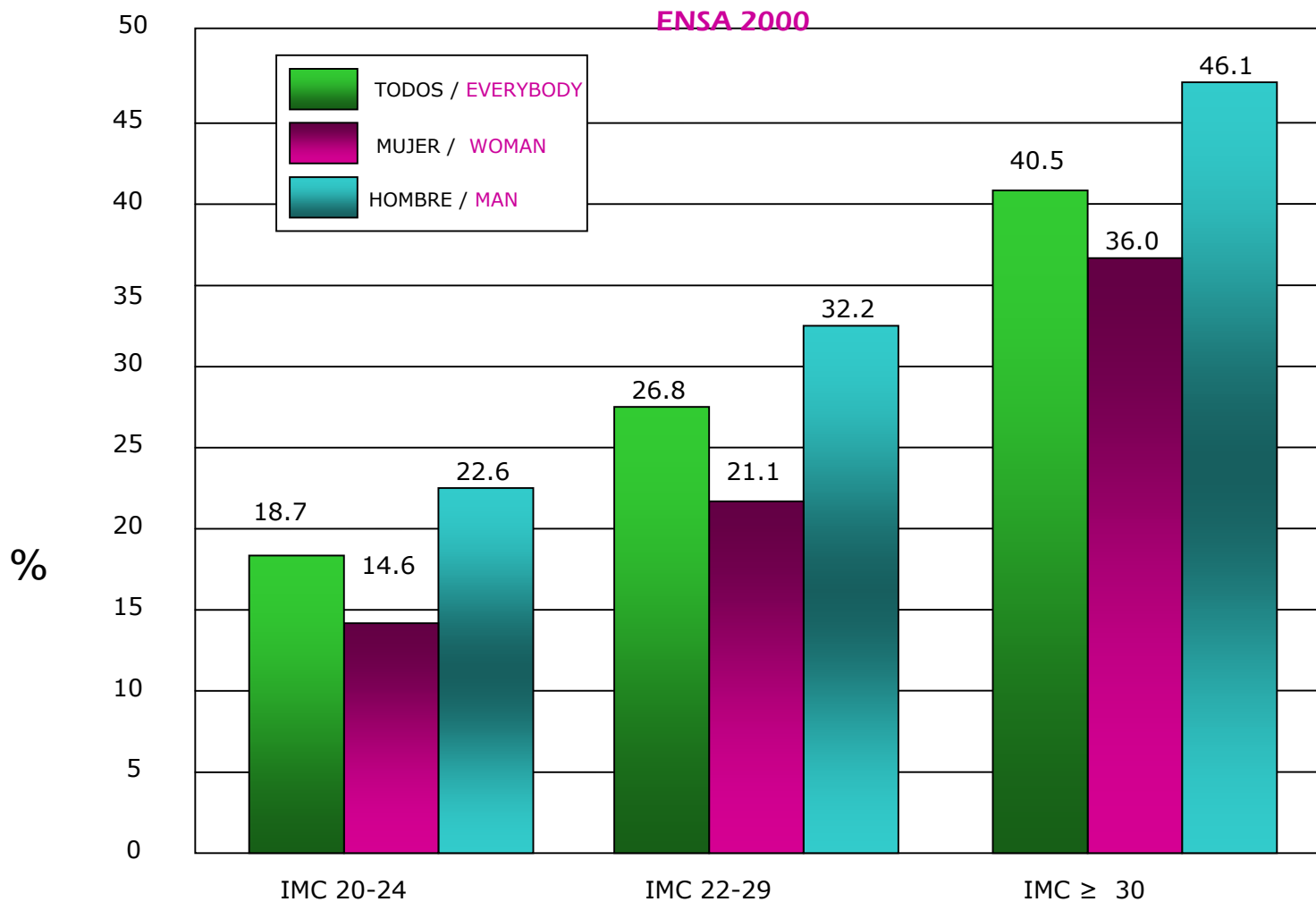
Total number of patients with Hypertension, ENSA 200 12,035 (30.05%)

- *Comments: In this survey, 12,035 people were identified as hypertensive. This diagnosis was based on a previous medical diagnosis while taking antihypertensive agents or if they had a blood pressure lower than 140 / 90 mm when the survey was conducted.*

- *ENSA: Encuesta Nacional de Salud / National Health Census*

Prevalencia de Hipertensión de Acuerdo al IMC, ENSA 2000*

Prevalence of Hypertension in accordance with the Body Mass Index



*Prevalencia ponderada a distribución poblacional y sexo, Censo 2000

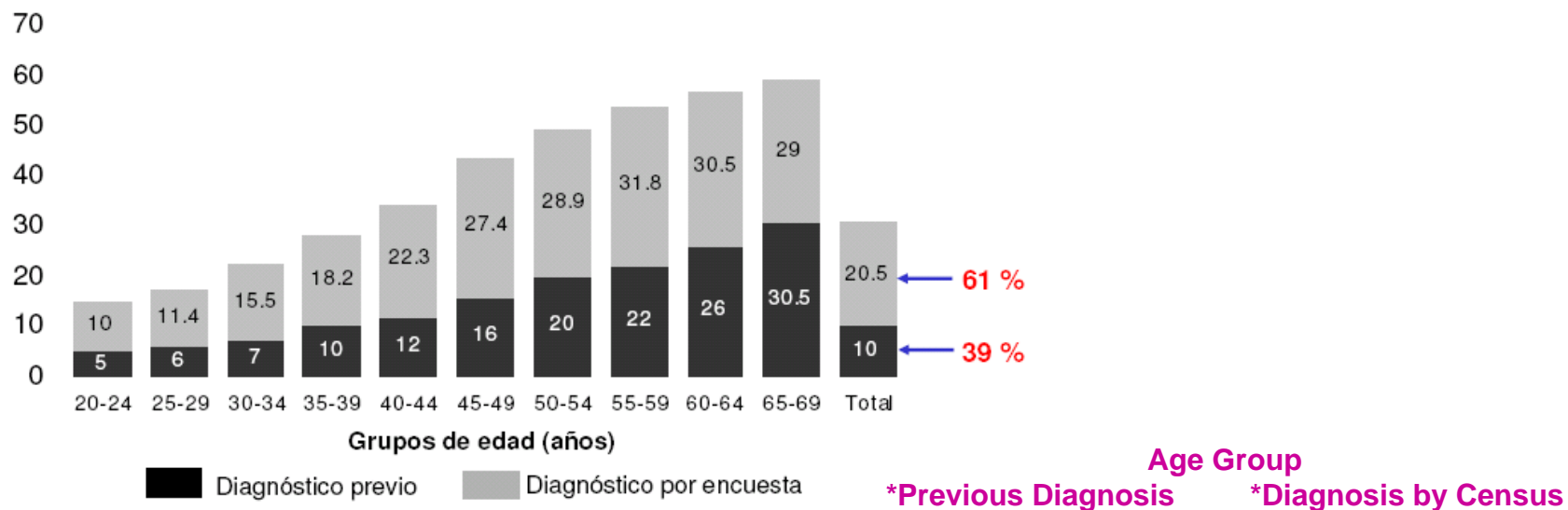
Prevalence arranged by population and gender distribution, Census 2000

Fuente: ENSA 2000

Source: ENSA 2000

Diagnosis of Hypertension Prevalence by age group: ENSA 2000

Diagnóstico de hipertensión arterial Prevalencia por grupos de edad: ENSA 2000



Velázquez Monroy O. et al. Arch Cardiol Mex. 2002; 72:71-84

*Comments: Hypertension is directly associated with the age of the population.
The group with greater prevalence was 65 to 69.*

Regional Hospital La Barca, Jalisco



Hospital Regional La Barca

Regional Hospital La Barca, Jalisco



Prevalencia de pacientes hipertensos en la consulta externa HRL

Prevalence of hypertensive patients in external consultation at the Regional Hospital in La Barca

Total de consultas Enero a Diciembre 2005
Total number of consultations
(3,095)

Total de pacientes con diagnóstico de HTA
Total number of patients diagnosed with Hypertension
1178 = 38%

Pacientes con diagnóstico de HTA 1ª vez
Patients diagnosed with hypertension for the first time
135 = 11.4%

Pacientes hipertensos con diabetes mellitus asociada
Hypertensive Patients suffering also from diabetes mellitus
353 = 29.9%
1ª vez 74 = 6.2%
First time 74 = 6.2%

Enfermedad asociada

Related Disease

Número de pacientes

Number of patients

EVC Cardiovascular Event	14
ICC Congestive Heart Failure	36
DISLIPIDEMIA Dyslipidemia	13

Fuente: Dpto. Estadística HRLB

Definición

Definition

- No existe una línea divisoria que separa la hipertensión de la normotensión, cuánto más baja, menor es la morbi-mortalidad.
- **There is no diving line that separates hypertension from normotension, the lower it is, less will be the morbid-mortality.**

Sir George Pickering

- El riesgo cardiovascular comienza a partir de 115/75
(JNC- VII)

The Cardiovascular risk begins from 115/75

(JNC VII: The Seventh Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure)

Clasificación JNC-VII

Classification of Blood Pressure (JNC VII)

Clasificación TA Classification of Blood Pressure	PAS mmHg Systolic Blood Pressure	PAD mmHg Diastolic Blood Pressure
Normal Normal	< 120 Less than 120	and < 80 Less than 80
Pre-hipertensión Prehypertension	120-139	or 80-89
Hipertensión estadio 1 Stage 1 hypertension	140-159	or 90-99
Hipertensión estadio 2 Stage 2 hypertension	≥ 160	or ≥ 100

Comments: In the recent JNC VII classification of Blood Pressure, a prehypertensive state is considered to have an increasing risk to develop Hypertension. This state indicates the need to enhance healthcare actions for this population.

The Framingham Heart Study suggests that normotensive patients older than 55 have a 90% risk to develop hypertension.

Valoración inicial (sospecha de HTA)

Initial Valuation (Suspecting Hypertension)

- Expediente clínico **Clinical file**
- Se realiza un cuestionario en el paciente sobre:
The patient answers a questionnaire that includes:
 - ✓ Antecedente de HTA **A previous history of hypertension**
 - ✓ Alimentación **diet**
 - ✓ Ingesta de sodio **sodium intake**
 - ✓ Actividad física **Physical activity**
 - ✓ Estrés **Stress**
 - ✓ Antecedentes heredo familiares **Family history**
 - ✓ Consumo de medicamentos **medications**
 - ✓ Consumo de alcohol **Alcohol consumption**

Valoración inicial (sospecha de HTA) Initial Valuation (Suspecting Hypertension)

- Toma de la PA **We take their blood pressure**
- Primera toma (ambos brazos), **First we take blood pressure in both arms**
- Segunda toma (2min después), en el brazo con la cifra más alta de PA con el paciente sentado.

Then, we take their blood pressure again, 2 minutes after the first one, but the one of the arm with a higher blood pressure while the patient is sitting.

- Tercera toma, brazo que registro la mayor PA dos min. Después de la segunda toma, con el paciente de pie.

Their blood pressure is taken for the third time in the arm that had a higher blood pressure, 2 minutes after the second one was taken and while the patient is standing up.

- Peso y cálculo del IMC **Clinical file**
- Se realiza un promedio de los 3 registros y se repite por lo menos en otra visita

RESULTADO DE LAS MEDICIONES EN CONSULTORIO

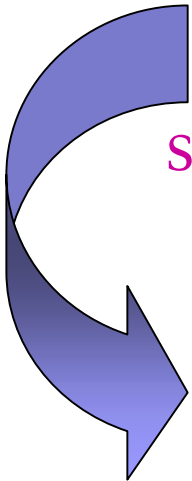
Blood pressure results at the office

PAS < 120 y PAD < 85

Systolic BP less than 120 and Diastolic BP less than 85

Se descarta el diagnóstico de HTA,

The Diagnosis of hypertension is discarded



RESULTADO DE LAS MEDICIONES EN
CONSULTORIO

Blood pressure results at the office

- Si se encuentran de forma sostenida cifras iguales o mayores a 140 para la sistólica y/o 90 para la diastólica se considera *HIPERTENSION*
- If blood pressure levels equal or higher than 140 SBP and / or 90 DBP are constantly found, then it is considered Hypertension .

Otras formas de medición de la Presión Arterial

Other ways of monitoring blood pressure

Auto-medicación en casa **Self-monitoring at home**

(≤ 135/85)

- Proporciona el registro de diferentes días en condiciones muy cercanas a las habituales de la vida diaria

It provides us with closer readings of different days while in a comfortable, every day life setting.

- Elimina el factor de la “ bata blanca” **It eliminates the “White- Coat Syndrome”**

- Es igualmente reproducible y predictiva hacia la presencia de daño a órgano blanco **It can be reproduced and predict if “White organs” are damaged.**

“White Organs” are heart, brain, kidneys, and blood vessels.

Monitoreo Ambulatorio de la Presión Arterial

Ambulatory Blood Pressure Monitoring (ABPM)

($\leq 125/80$)

- Mejor correlación de daño a órgano blanco
A better assessment of white organ involvement
- Mejor predicción del riesgo cardiovascular
An enhanced prediction of cardiovascular disease
- Mide con más precisión la reducción de la PA debido al tratamiento
An increased precision when reading how blood pressure is decreasing due to treatment
- Favorece la eliminación de la bata blanca y el placebo
It reduces the size of any placebo effect; and it can be used to eliminate "White-coat Syndrome"

* Rutina en DM o nefropatía (*Routine in Diabetes Mellitus or nephropathy*)

** énfasis en DM (*Focusing in Diabetes*)

***síndrome metabólico

Evaluación Evaluation

(*Metabolic Syndrome*)

JNC-7	ESH-ESC	RUTINA vs. OPCIONAL Routine ® vs. Optional (o)	INCICH	III CNHA	CLAHA
R	R	Glucosa Plasmática / Plasma Glucose	R	R	R
R	R	Perfil de lípidos / Lipid profile	R	R	R
R	R	Creatinina sérica / Serum Creatinine	R	R	R
-	-	Nitrógeno ureico / Urea Nitrogen	R	-	-
R	R	Potasio sérico / Serum Potassium	R	R	R
-	-	Sodio sérico / Serum Sodium	R	-	-
-	R	Hemoglobina / A1c Hemoglobin	R	R	R
R	R	Hematocrito / Hematocrit	R	R	R
-	R	Acido úrico / Serum Uric Acid	R	R	R
R	-	Calcio / Calcium	R	O	-
-	-	Fósforo / Phosphorus	R	-	-
R	R	Examen General de orina / Urine test	R	R	R
O*	O	Microalbuminuria / Microalbuminurea	R	O**	O
R	R	ECG / EKG	R	R	R
-	-	Rx tórax / Thorax XR	R	O	O
O	O	PCR	O***	O***	-
O	O	ECOCARDIOGRAMA / Echocardiogram	O	O	O
-	-	MAPA		O	-

Estratificación

Cardiovascular Risk Stratification

de riesgo cardiovascular (asociado)

Table 2 Stratification of risk to quantify prognosis

Other risk factors and disease history	Blood pressure (mmHg)				
	Normal SBP 120–129 or DBP 80–84	High normal SBP 130–139 or DBP 85–89	Grade 1 SBP 140–159 or DBP 90–99	Grade 2 SBP 160–179 or DBP 100–109	Grade 3 SBP \geq 180 or DBP \geq 110
No other risk factors	Average risk	Average risk	Low added risk	Moderate added risk	High added risk
1–2 risk factors	Low added risk	Low added risk	Moderate added risk	Moderate added risk	Very high added risk
3 or more risk factors or TOD or diabetes	Moderate added risk	High added risk	High added risk	High added risk	Very high added risk
ACC	High added risk	Very high added risk	Very high added risk	Very high added risk	Very high added risk

ACC, associated clinical conditions; TOD, target organ damage; SBP, systolic blood pressure; DBP, diastolic blood pressure.

Recomendación del JCN VII

JCN VII Recommendations

Combinación / **Combination:**

Cuando la presión está en cifras 20/10 mmHg por arriba de la meta

When blood pressure readings are 20 /10 mm Hg above the goal

> 160/100 mmHg (no DM, sin DOB) **(No Diabetes, no White organ damage)**

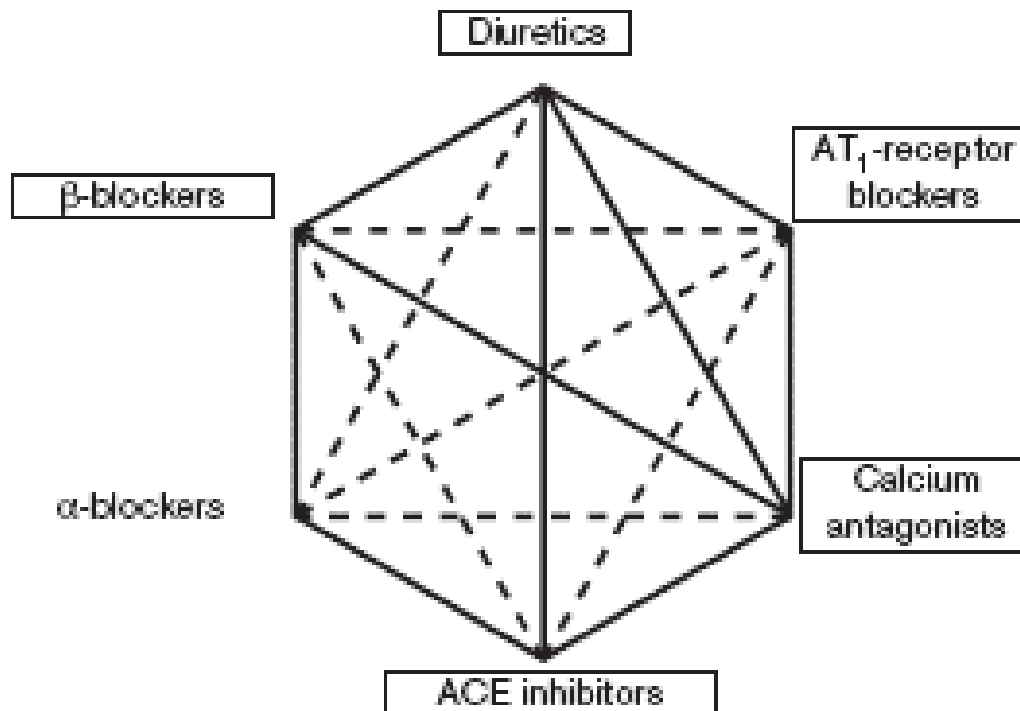
> 150/100 mmHg (DM, o con DOB) **(Diabetes, has White organ damage)**

Debe valorarse el empleo de dos fármacos desde el inicio

Two medications should be used from the beginning

Tratamiento combinado

Combined Treatment





**PREFERENCIAS
EN EL TRATAMIENTO
DEL PACIENTE CON
DAÑO A ÓRGANO BLANCO**

Treatment preferences for patients
with “white organ” damage

Recomendaciones **Recommendations**

Preferencias **Preferences**

1. IECA, ARA II e Indapamina **ACE Inhibitors, AT1 Blockers and Indapamide**

En pacientes con proteinuria **In patients with proteinuria**

Reducen la progresión del daño renal y retrasan la necesidad de diálisis

It reduces renal damage progression and it delays the need of dialysis

Recomendaciones Recommendations

Preferencias Preferences

2. IECA o ARA II ACE Inhibitors or AT1 Blockers

En los pacientes con disfunción ventricular sistólica, aun asintomático.

In patients with systolic ventricular dysfunction, even without clear symptoms

Mejoría en la función y reducción de la mortalidad

It improves its function and reduces mortality.

Evidencias (Evidence):

ELITE-I	ValHeft
CHARM	OPTIMAAL
VALLIANT	CONSENSUS
SAVE	SOLVD
IDNT	VALUE

Recomendaciones Recommendations

Preferencias Preferences

3. IECA s, o ARAs II ACE Inhibitors or AT1 Blockers

En hipertrofia ventricular izquierda In Left Ventricular Hypertrophy

(Aun cuando todos los grupos farmacológicos han demostrado regresión de hipertrofia ventricular, los IECA son los que tienen mayor grado de regresión en menor tiempo y reducen la morbi-mortalidad)

(Even when all pharmacological groups have shown to induce regression of ventricular hypertrophy, the ACE Inhibitors are the ones that have significant improvement in less amount of time and reduces morbid-mortality.)

Evidencias / Evidence:

Gottdiener JS, et al 1997	comparativo a 6 meses
LIVE 2000	Indapamina vs enalapril
PRESERVE (2001)	Enalapril
LIFE (2002)	Losartán vs atenolol
CATCH (2002)	Candesartán

Recomendaciones **Recommendations**

Preferencias **Preferences**

4. β -bloqueadores **Beta Blockers**

En los pacientes con cardiopatía isquémica y/o disfunción ventricular izquierda

In patients with Ischemic Cardiopathy and / or Left Ventricular Dysfunction

Reducción de la morbi-mortalidad cardiovascular

The decrease of cardiovascular morbid-mortality

Evidencias / Evidence:

BBPP (varios): Eur Heart J 1988; 9:8-16

MERIT-HF (metoprolol): Lancet 1999; 353:2001-7

CIBIS-II (bisoprostol): Lancet 1999; 353:9-13

CAPRICORN (carvedilol): Lancet; 357:1385-90

Recomendaciones Recommendations

Preferencias Preferences

5. BBCa, IECA, ARA o Indapamina CCBs (Calcium Channel Blockers), ACE Inhibitors, AT1 Blockers and Indapamide

En prevención primaria y secundaria de EVC

In primary and secondary prevention of Cardiovascular Event

Evidencias / Evidence:

LIFE: (Losartán vs beta

Punto secundario (prevención 1er EVC)

RRR ajustada 24.9%, $p = 0.001$

PROGRESS:

Punto primario (prevención 2do EVC)

RRR48% perindopril/indapamina

ASCOT-bIpa:

Punto secundario (prevención 1er EVC)

RRR 23% ($p < 0.05$)