

# **EPIDEMIOLOGY OF HYPERTENSION**

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# Learning Objectives of epidemiology of hypertension lecture

- Defining hypertension
- Explain why HT is an important public health problem
- Describe the global burden of hypertension
- Identify the risk factors
- Clarify the role of hypertension in the causation of other CVS and the value of blood pressure control
- Discuss the public health challenge & barriers to treatment
- List down the prevention strategies

**Hypertension Defined as**  
**sustained abnormal elevation of**  
**the arterial blood pressure.**

**SBP  $\geq 140$  mmHg and/or**

**DBP  $\geq 90$  mmHg**



# **HYPERTENSION**

**Hypertension is a major public health problem & a big challenge in 21<sup>st</sup> century in both developed and developing countries.**



# BLOOD PRESSURE CATEGORIES

Blood pressure category	Systolic mm Hg (upper number)		Diastolic mm hG (lower number)
Normal	less than 120	and	less than 80
Elevated	120-129	and	less than 80
High blood pressure (Hypertension) Stage 1	130-139	or	80-89
High blood pressure (Hypertension) Stage 2	140 or higher	or	90 or higher
Hypertensive Crisis (consult your doctor immediately)	Higher than 180	and/or	Higher than 120

# CLASSIFICATION OF HYPERTENSION

## Primary (Essential) Hypertension

- Elevated BP with unknown cause - 90% to 95% of all cases

## Secondary Hypertension

- Elevated BP with a specific cause - 5% to 10% in adults



# Identifiable Causes of Hypertension

- Drug or medication eg: NSAD, steroids
- Chronic kidney disease
- Primary hyperaldosteronism (Conn's syndrome)
- Renovascular disease (renal artery stenosis)
- Cushing's disease.
- Pheochromocytoma
- Sleep apnea
- Thyroid or parathyroid disease

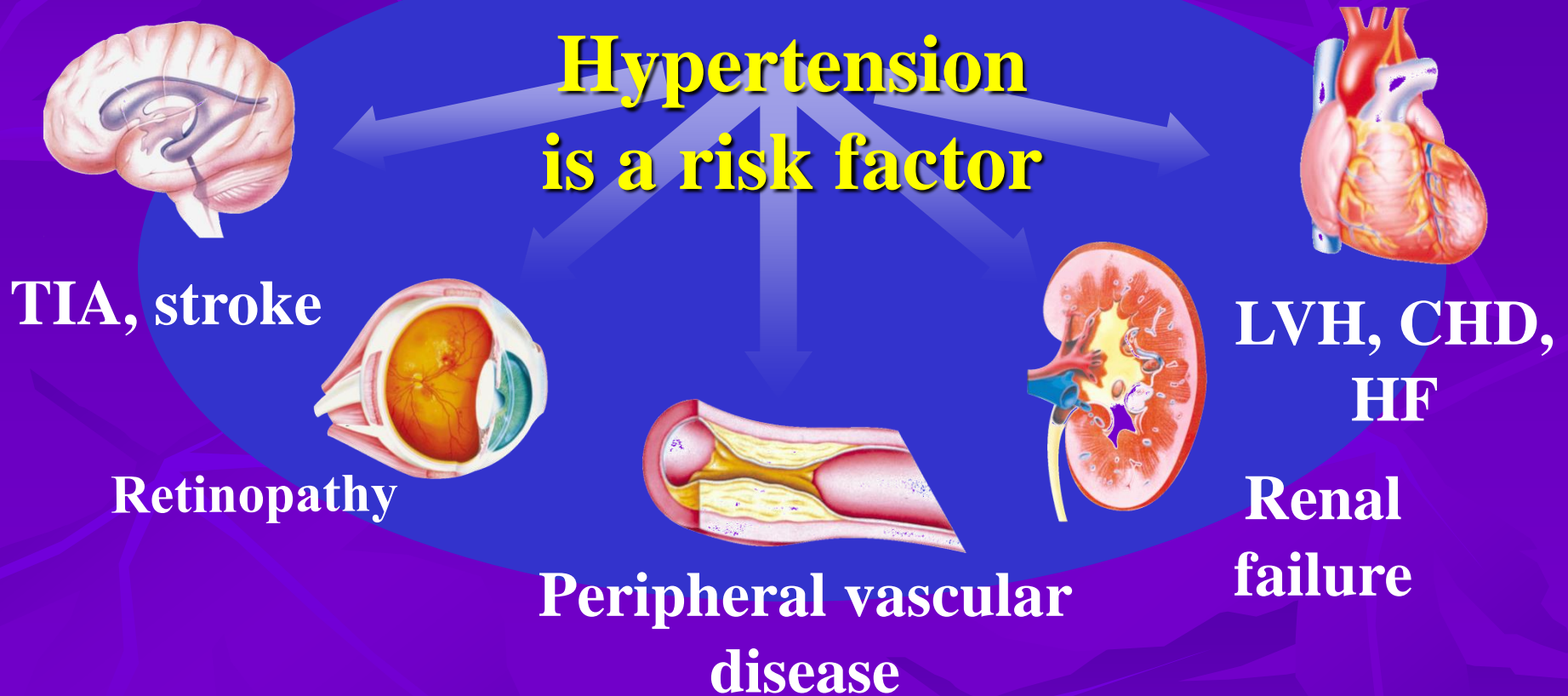
# Why Hypertension is a major public health problem?

- is It very **common** in the adult population.
- Major **risk factor** of coronary, cerebral and renal disease.

- Usually asymptomatic.
- Is readily detectable
- There is considerable reduction in cardiovascular risk with effective lowering of blood pressure with treatment.



# Complications of Hypertension:



Since patients with HT  
have:

2 times higher risk of CAD

4 times higher risk of CHF

7 times higher risk of CVA



• Most common reason for visit to physician.

• Medications for HT are the most commonly prescribed drugs in worldwide.

- Usually easily **treatable**, but if untreated it leads to **lethal complications**.
- There is **insufficient** awareness, treatment & control of hypertension.
- **Economic impact** .

# Global burden of hypertension

The World Health Organization (WHO) has estimated that there are **1.2** billion hypertensives globally.

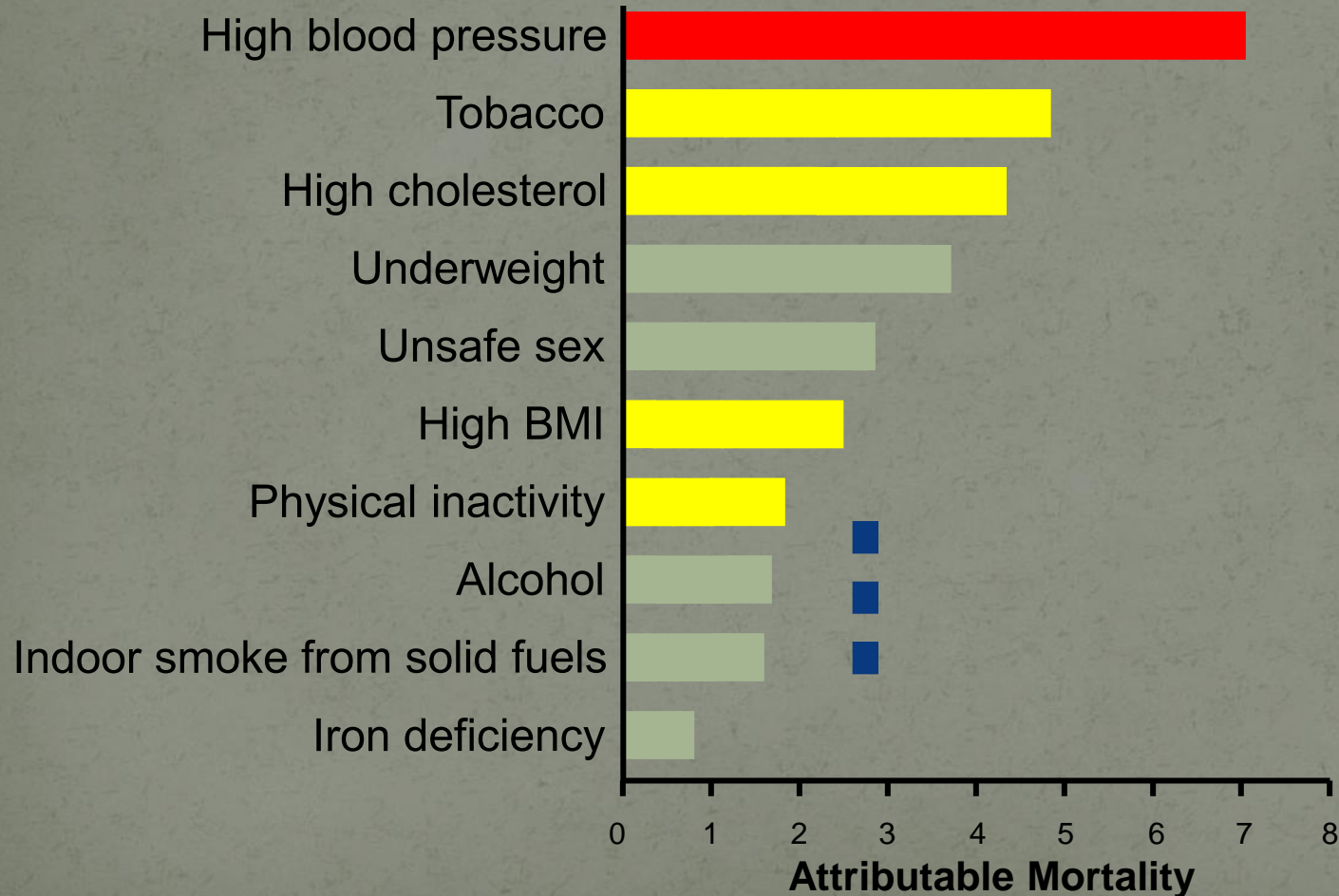
This figure is expected to increase to **1.56** billion by the year **2025** which means about 1 of every 4 adults being affected.



- The prevalence of hypertension **20% - 30%** of the adult population.
- Prevalence of hypertension varies around the world with the lowest prevalence rural **India**(**3.4%** in men) & (**6.8%** in women).
- The highest rate reported in **Poland**(**68.9%** in men)& (**75.5%** in women).

- Hypertension causes one in every eight deaths, accounts for almost 30% of all deaths due to its complication.
- 7.1 million people die annually as a direct result of hypertension.
- Hypertension is the 1<sup>st</sup> leading risk factor attributable to mortality worldwide.

# Proportion of Deaths Attributable to Leading Risk Factors Worldwide



# In USA

- Prevalence between 14% to 40% in 35 to 64 years.
- 67.9% of those are being treated.
- Only 44% have it under control.

# Eastern Mediterranean region (EMR):

- Prevalence of hypertension 26% .
- It affects approximately 125 million individuals.
- Each year there are several millions new cases of hypertension and more of pre - hypertension.



**Iraq**

32,778,000

HTN

**24.4%**

**Kuwait**

3,250,000

HTN

**20%**

**Bahrain**

1,318,000

HTN

**28%**

**KSA**

28,288,000

HTN

**25.2%**

**Is. Rep. Iran**

76,424,000

HTN

**24.3%**

**Qatar**

2,051,000

HTN

**25%**

**UAE**

9,206,000

HTN

**19.1%**

**Yaman**

23,852,000

HTN

**25.1%**

**WHO 2014 ANNUAL  
REPORT**

**TOTAL  
POPULATION**

**180,481,000**

**HTN 24%**

# Hypertension in Iraq

- The WHO Eastern Mediterranean Region health statistics published in 2008 revealed that the prevalence of hypertension in Iraq for both sexes was **29.4% (20.4–38.9%)** .

# Hypertension in Iraq

- In Iraq hypertension is considered as the sixth leading cause of death with a prevalence that ranges from 35.6% to 40%, according to national studies .
- and a total number of 6535 deaths occurred during 2015

# Hypertension in Iraq

- It was higher among male as compared to female.

# Public Health Challenge of Hypertension:

1. Prevent BP rise with age.
2. Decrease existing prevalence .
3. Increase awareness and detection  
Has no symptoms, called the “silent killer”.
4. Improve control.
5. Reduce cardiovascular risks.





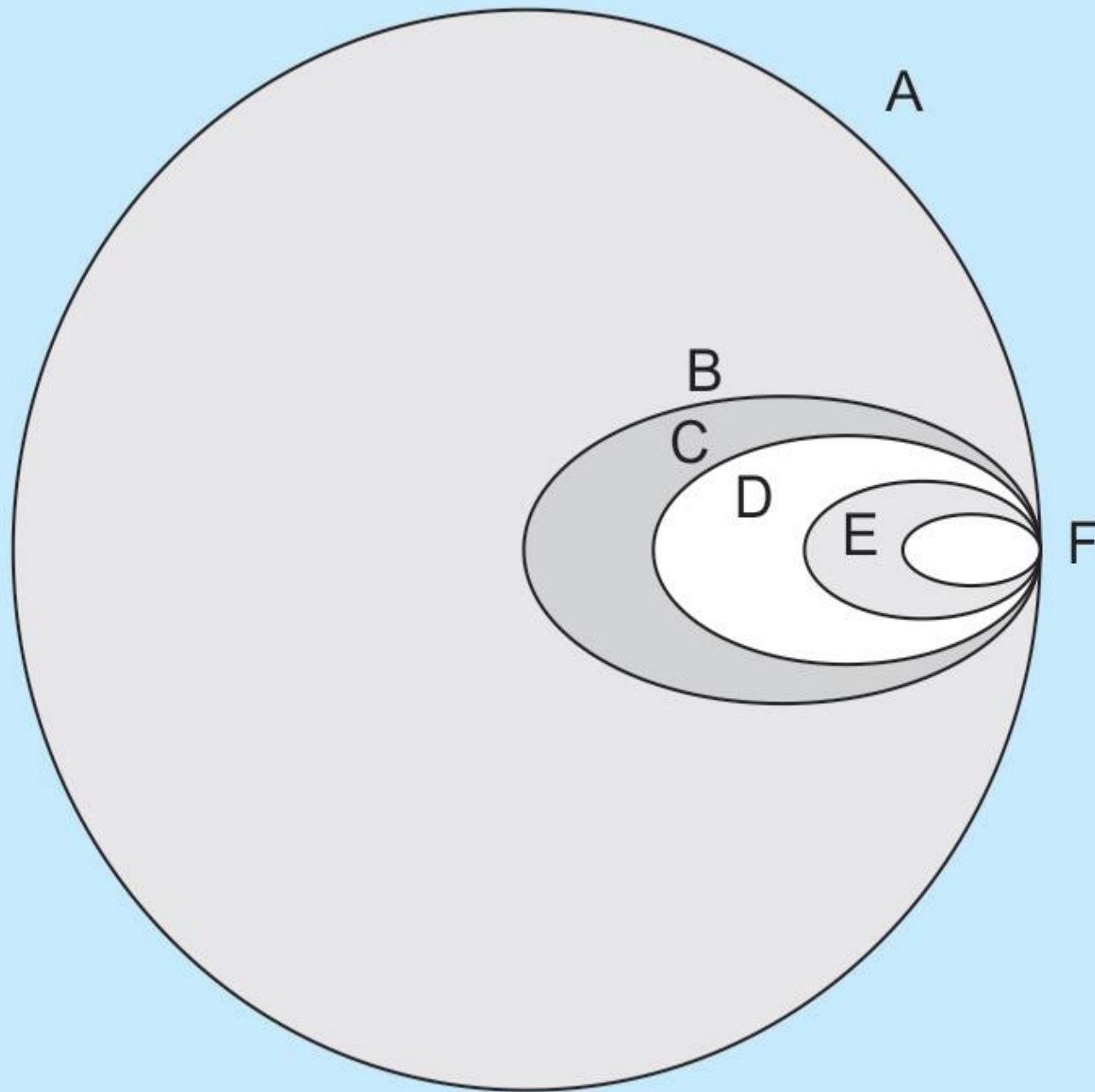
# Challenges to Hypertension Management: Public Perceptions

**44%** of people could not identify a normal or a high blood pressure reading

**80%** of people were unaware of the association between hypertension and heart disease

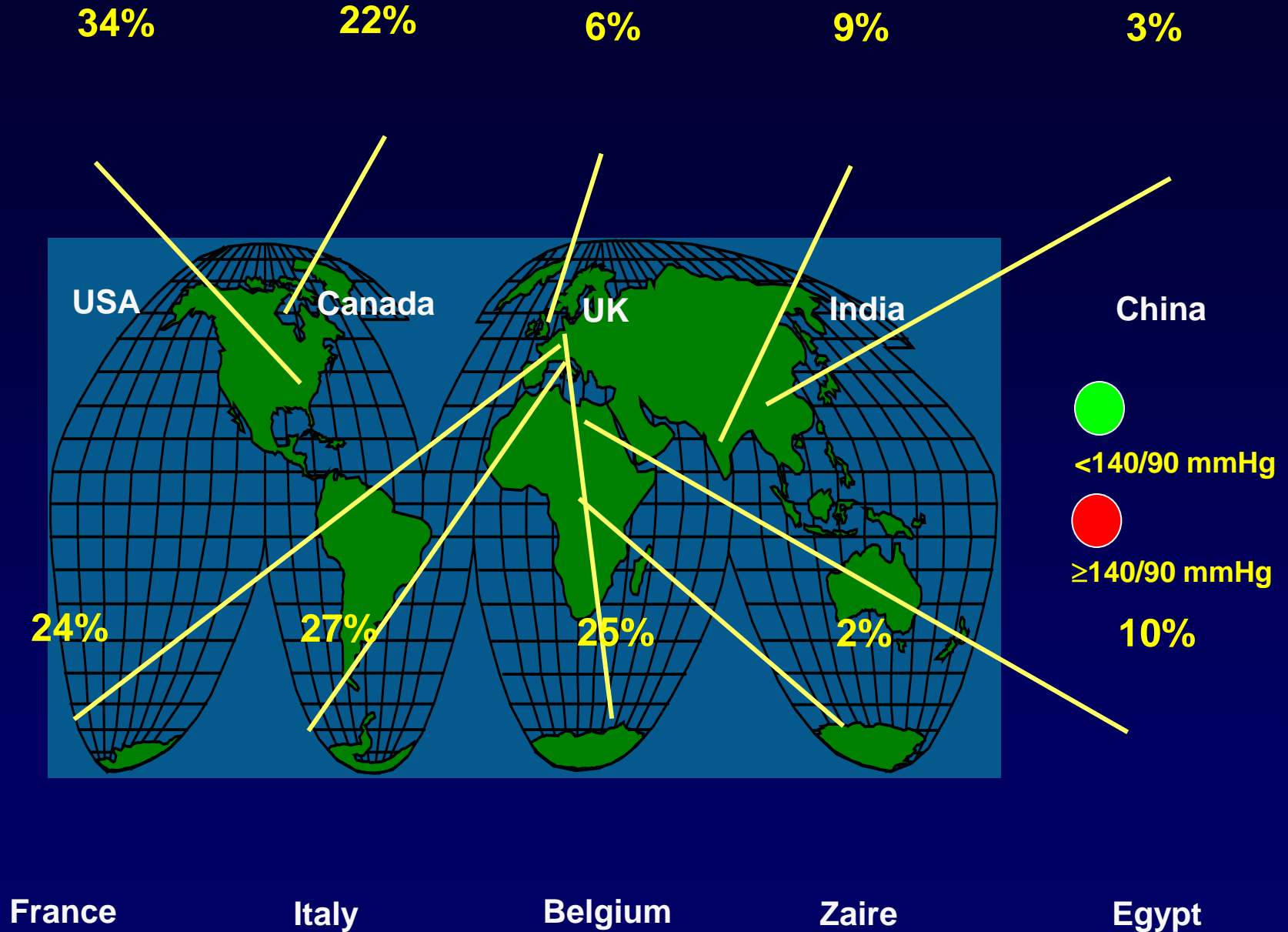
**63%** believed that hypertension was not a serious condition

**38%** of people thought they could control high blood pressure without the help of a health professional



- A Total population
- B Hypertensive
- C Symptomatic hyp
- D Diagnosed hyp
- E Treated
- F Adequately trea

# Treated hypertensive subjects with BP <140/90 mmHg

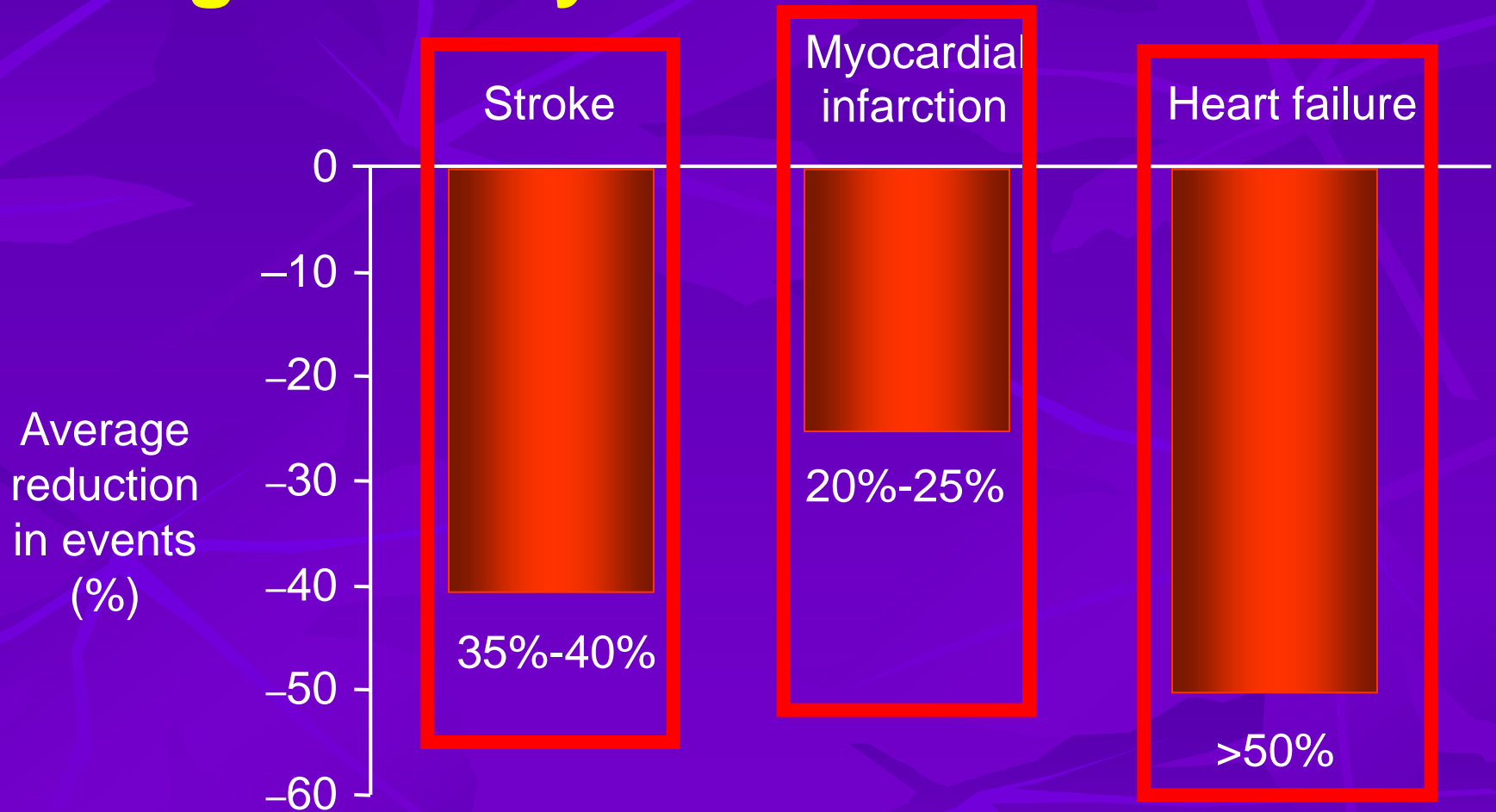


# What Are the Benefits of Treating Hypertension?

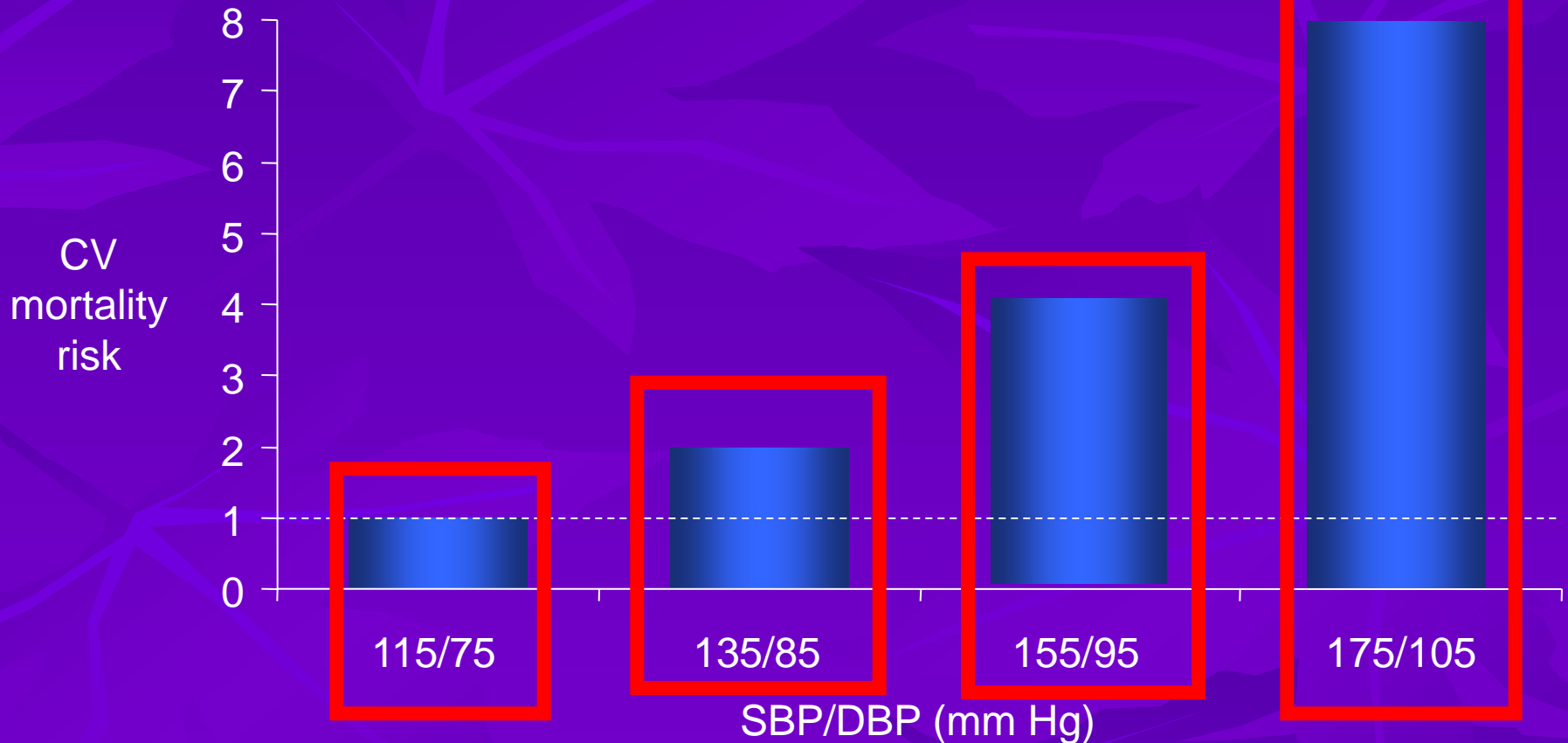
*For a decrease of **10/5 mm Hg**:*

- **Heart attack** ↓ by 15%
- **Heart failure** ↓ by 50%
- **Stroke** ↓ by 38%
- **Death** ↓ by 10%

# Long-Term Antihypertensive Therapy Significantly Reduces CV Events



# CV Mortality Risk Doubles with Each 20/10 mm Hg BP Increment\*






- Blood pressure is under control in less than 20% of patients with hypertension in many countries.

# Comparison between hypertension in developed and developing countries regarding prevalence ,awareness, treatment and control

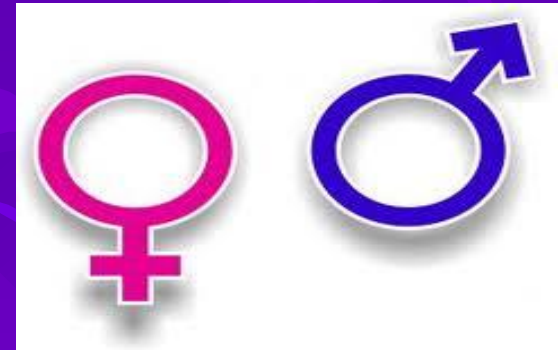
	Developed countries	Developing countries
Prevalence	33.6%	32.2%
Awareness	61.7%	40.6%
Treated	40.6%	29.2%
Control	17.3%	9.8%
Mortality	7%	25%



# RISK FACTORS OF HYPERTENSION

# Non modifiable risk factors

1. Age
2. Gender
3. Race
4. Genetics



# Modifiable risk factors:

1. **Obesity & Over weight.**
2. **Smoking.**
3. **Alcohol consumption.**
4. **Salt intake.**
5. **Physical inactivity.**
6. **Stress.**
7. **Diabetes.**
8. **Hyperlipidemia.**
9. **Unhealthy diet.**



# PREVENTION OF HYPERTENSION

The WHO has recommended the following approaches in the prevention of hypertension:


- (a) Population strategy
- (b) High- risk strategy





## Population approach:

The aim of this strategy is the primary prevention of hypertension through elimination of modifiable risk factors and promotion of protective factors that help to maintain reasonable blood pressure,

The background of the slide features a close-up, slightly blurred image of several green leaves. The leaves have prominent veins and are arranged in a way that creates a sense of depth and texture. The lighting is soft, highlighting the natural colors of the foliage.

This approach is highly effective in reducing hypertension and its complication in the community.

# Individual approach;

Through identification of individuals with risk factors or hypertensive patients at risk of complications and effective management through life style modification with or without drug treatment .

**This approach is associated with high motivation for patients and doctors but costly.**

## Life style measures:

**1- Weight reduction;** it decrease BP in hypertensive patients to  $> 10\%$ .It improve lipid profile, reduce insulin resistance .

Weight reduction is essential in obese hypertensive patients for 3-6 months trial before initiation of antihypertensive therapy.

**2-Adopte DASH**

# Dietary Approaches to Stop Hypertension DASH Diet:

- Promotes fruits, vegetables, whole grains and low fat dairy products
- Adequate Calcium, Potassium, Magnesium intake
- Low in red meat, sweets and sugar beverages

# DASH is Unique due to:

- Tested dietary patterns rather than single nutrients
- Experimental diets used common foods that can be incorporated into recommendations for the public
- Investigators planned the DASH diet to be fully compatible with dietary recommendations for reducing risk of CVD, osteoporosis and cancer





## **DASH Diet Pattern based on a 2,000 calorie diet**

<b><u>Food Group</u></b>	<b><u>Servings*</u></b>
<b>Grains</b>	<b>7-8</b>
<b>Vegetables</b>	<b>4-5</b>
<b>Fruits</b>	<b>4-5</b>
<b>Low-fat or fat free dairy</b>	<b>2-3</b>
<b>Meats, poultry, fish</b>	<b>less than 2</b>
<b>Nuts, seeds, dry beans and peas</b>	<b>4-5/week</b>
<b>Fats and oils</b>	<b>2-3</b>
<b>Sweets</b>	<b>5/ week</b>

**4- Restriction of sodium intake;** is very helpful in reducing BP, recommended intake is 6gm/day.

**5- Reduction in alcohol intake;** helps to reduce both systolic and diastolic BP especially when combined with energy restriction and weight reduction.

**6- Tobacco smoking;** hypertensive smokers have 2-3 folds excess risk of stroke and CHD, cessation of smoking is the most effective single step to reduce CV risk among hypertensive.

**7-Control dyslipidemia;** high serum cholesterol, elevated LDL and triglyceride, reduced HDL.

**Physical activity** is most effective measure to correct dyslipidemia in hypertensive patients

**8- Control of diabetes mellitus;** contribution of insulin resistance is well established in hypertensive patients, wt reduction, nutritional management and exercise improve insulin sensitivity.

# Hypertension & Type 2 Diabetes

The prevalence of hypertension is about twice as high among patients diagnosed with type 2 diabetes as it is among patients without diabetes

The current obesity epidemic contributes to hypertension and type 2 diabetes

Losing as little as 10 pounds can contribute to reducing hypertension and improving glucose sensitivity.

## 9-Clinical assessment of people with hypertension :

help to assess the overall cardiovascular risk, search for possible causes and evaluation of existing organ damage or concomitant disease.

# Summary

- Hypertension is a serious problem all over the world that could be called "the silent killer". Its prevalence is very high.
- Unfortunately only  $1/2$  diagnosed,  
 $1/2$  treated  
 $1/2$  controlled.



# Summary

- Incidence of hypertension will be reduced by **20% to 50%** if primary prevention were implemented.
  
- In developing countries effective efforts ought to be taken in order to:
  1. **prevent, prevent, prevent**
  2. **diagnose and treat**

# THANK YOU

