

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

**According to WHO definition 2023
Hypertension Defined as sustained
abnormal elevation of the arterial blood
pressure .**



Hypertension diagnosed when:

- Systolic blood pressure ≥ 140 mmHg, and/or
- Diastolic blood pressure ≥ 90 mmHg
- measured on two separate occasions under appropriate conditions.

- WHO's specific cut-off point for a diagnosis, it is still **140/90**.
- However, medical professionals are increasingly treating patients at **130/80** to prevent long-term damage.

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

The latest WHO guidance (updated in late 2025/2026) recommends:

- **Treatment Goal:** Aim for < 130/80 mmHg if the patient has high cardiovascular risk, diabetes, or kidney disease.

HYPERTENSION

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

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,CCP
- Chronic kidney disease CKD
- Vascular causes :coarctation of the aorta
- Primary hyperaldosteronism (Conn's syndrome)
- Renovascular disease (renal artery stenosis)
- Cushings disease.
- 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:

**Hypertension
is a risk factor**



TIA, stroke



Retinopathy

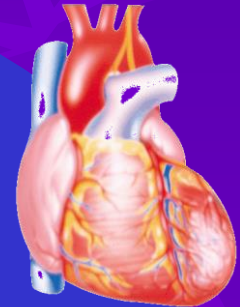


**Peripheral vascular
disease**



**LVH, CHD,
HF**

**Renal
failure**



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 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

According to the World Health Organization (WHO) reports , An estimated **1.28** billion adults aged 30–79 years worldwide have hypertension, most (**two-thirds**) living in **low- and middle-income**.

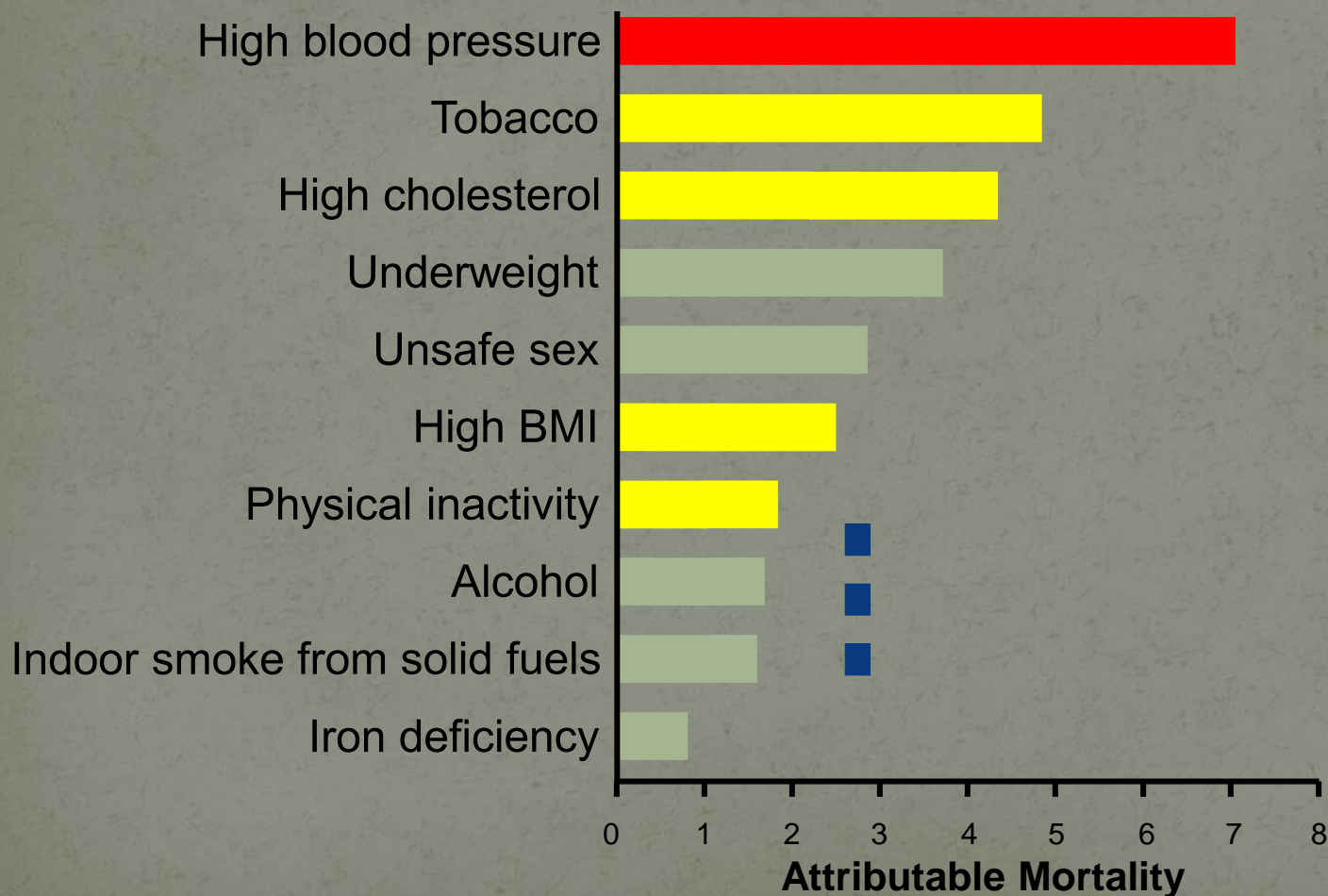
One of the global targets for noncommunicable diseases is to reduce the prevalence of hypertension by **33%** between 2010 and 2030.

- An estimated **46%** of adults with hypertension are unaware that they have the condition.
- Less than half of adults (**42%**) with hypertension are diagnosed and treated.
- Approximately **1 in 5** adults (**21%**) with hypertension have it under control.
- Hypertension is a major cause of premature death worldwide.

- 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 1st leading risk factor attributable to mortality worldwide.

Proportion of Deaths Attributable to Leading Risk Factors Worldwide



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 2014 revealed that the prevalence of hypertension in Iraq for both sexes was **24.4%**.

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.



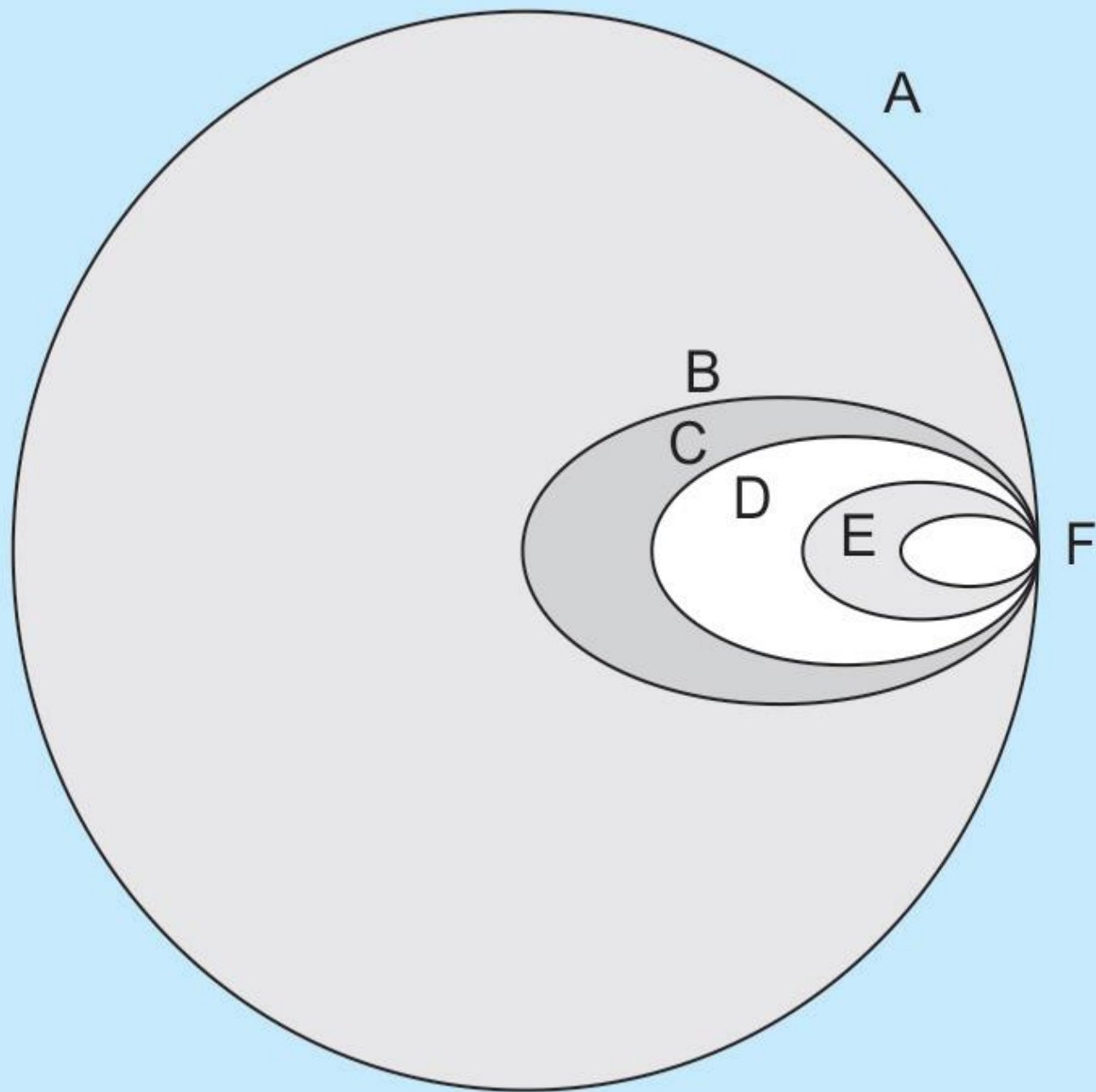
Challenges to Hypertension Management: Public Perceptions

44% of people could not identify a normal or a high blood pressure readings.

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 hypertension
- D Diagnosed hypertension
- E Treated
- F Adequately treated

Treated hypertensive subjects with BP <140/90 mmHg

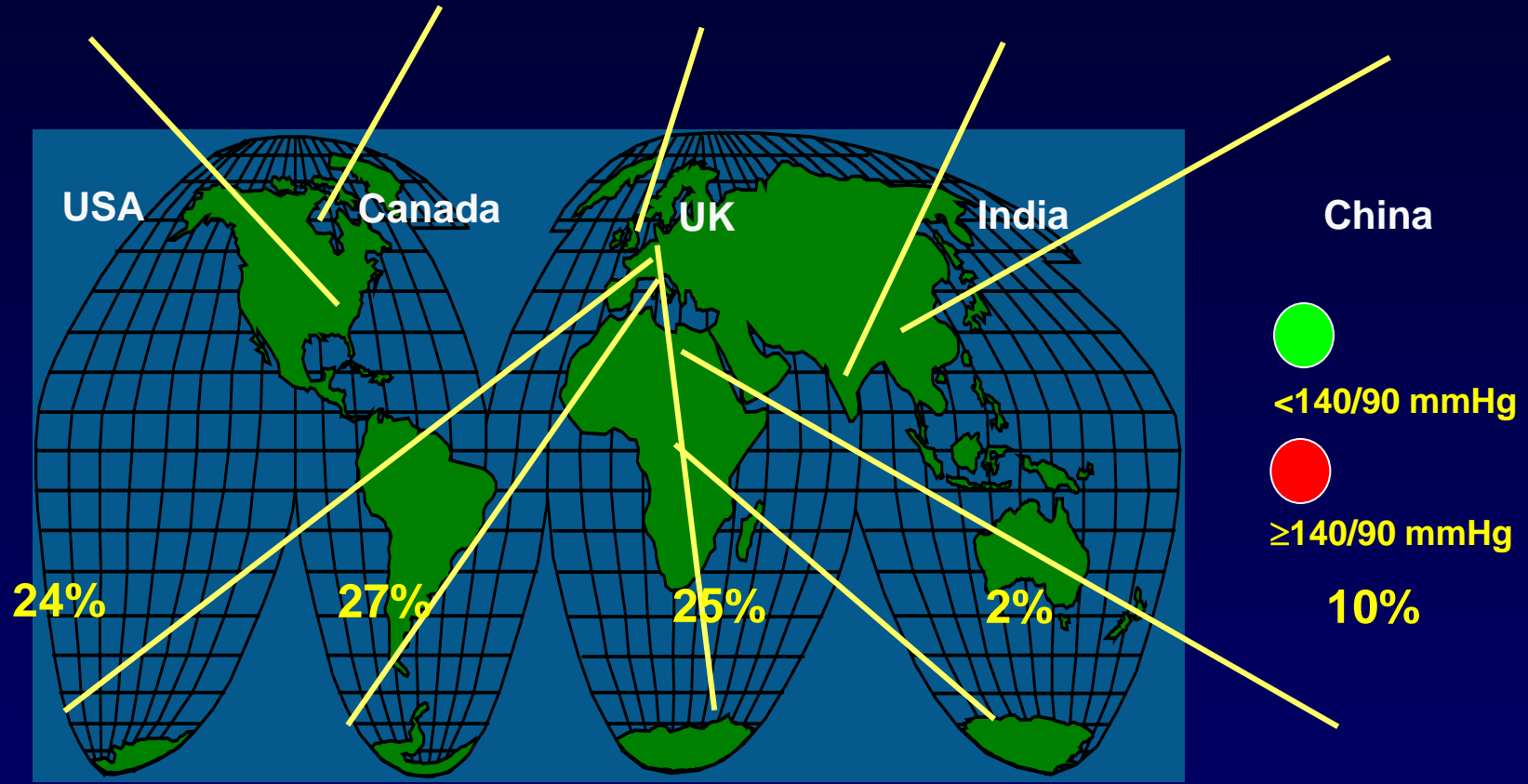
34%

22%

6%

9%

3%



France

Italy

Belgium

Zaire

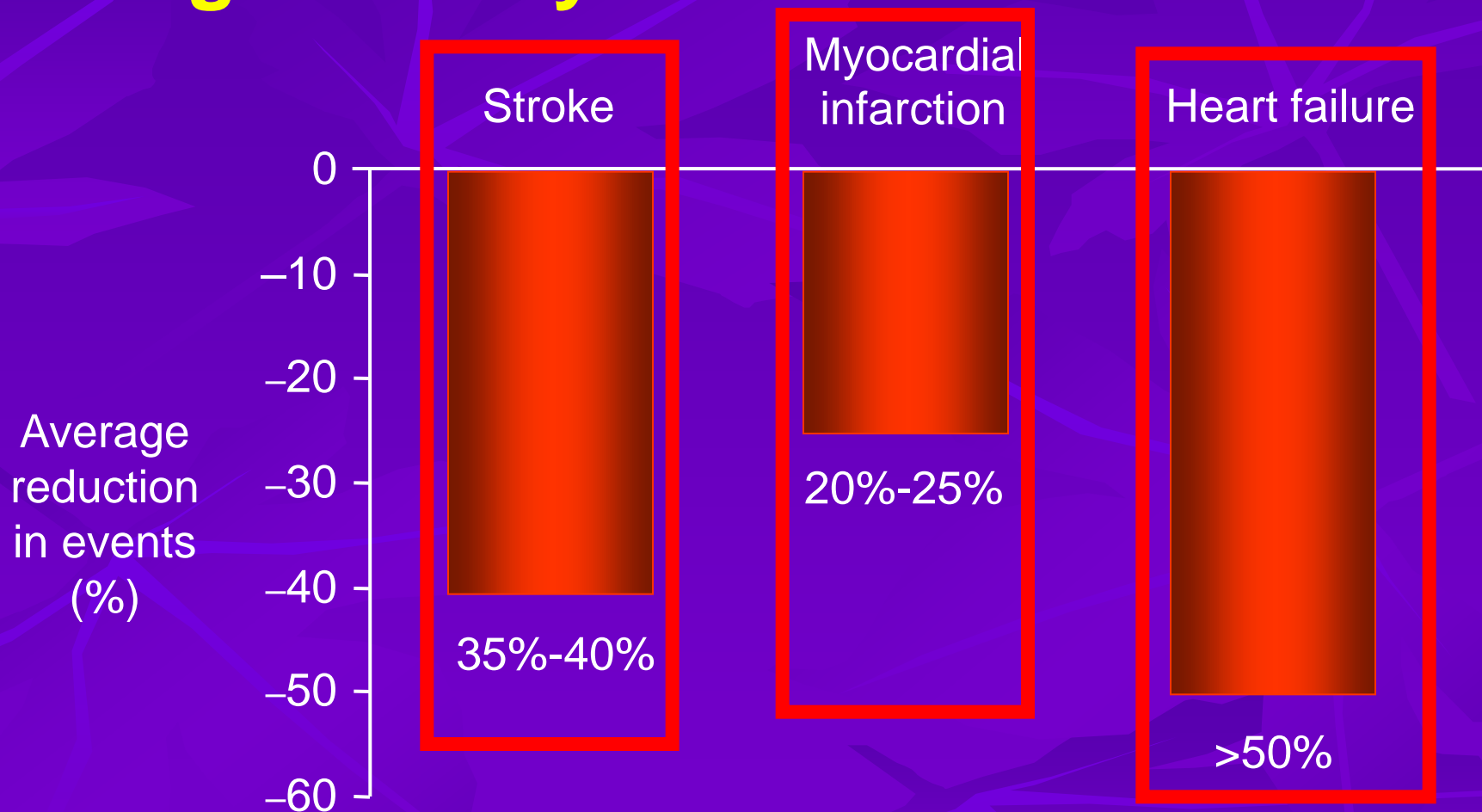
Egypt

What Are the Benefits of Treating Hypertension?

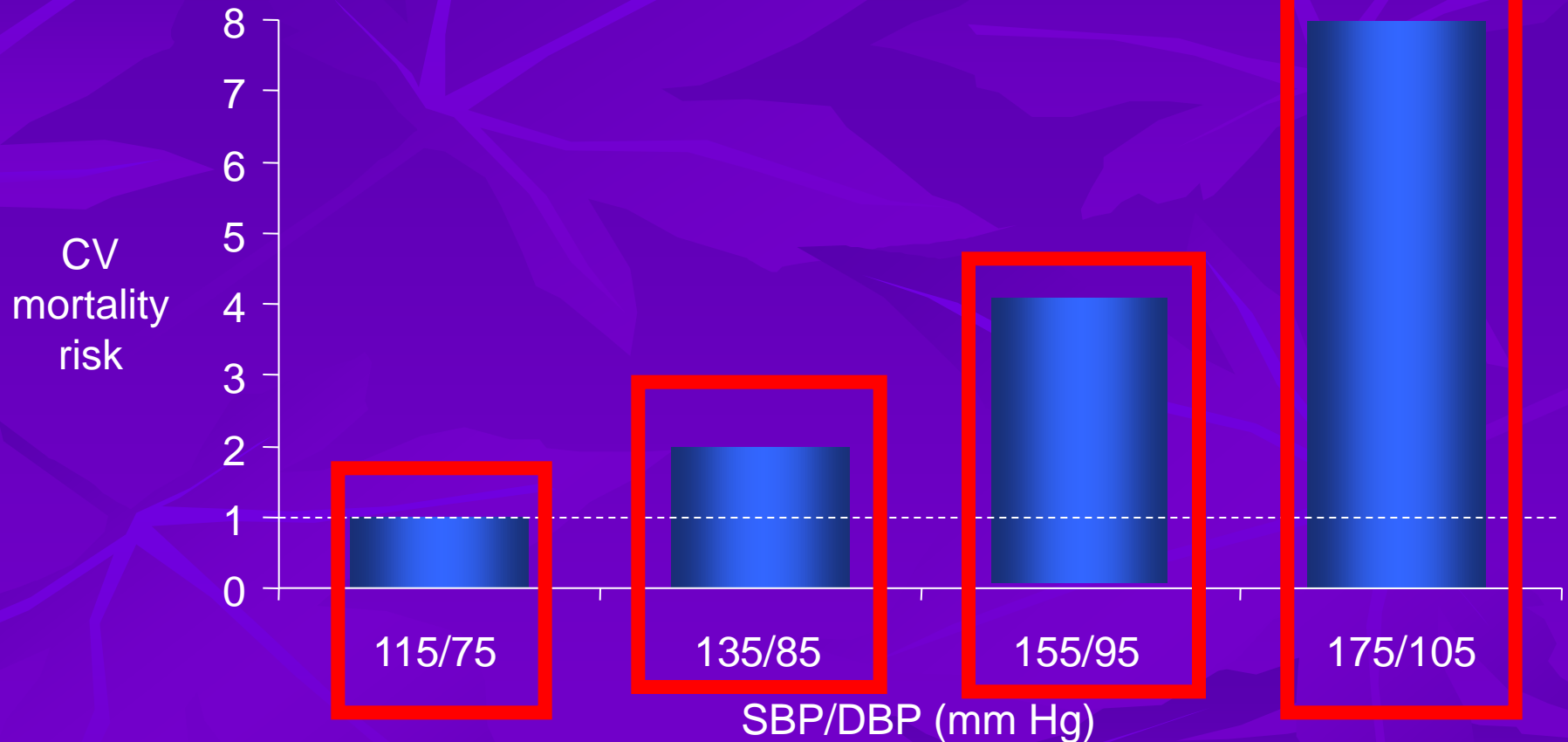
For a decrease of 10/5 mm Hg:

- **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 21% of patients with hypertension in many countries.**

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

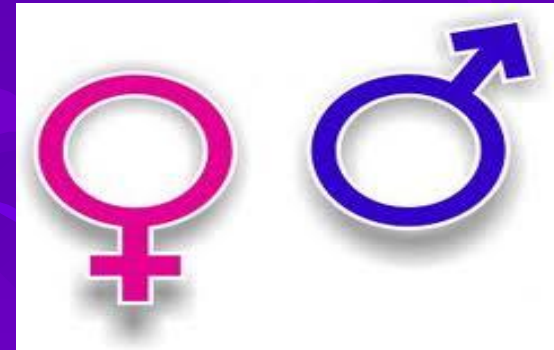
	Developed countries	Developing countries
Prevalence	33.6%	32.2%
Awareness	61.7%	40.6%
Treated	40.6%	29.2%
Control	17.3%	9.8%
Mortality	7%	25%



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,

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 sugary beverages

DASH is Unique due to:

- Tested dietary patterns rather than single nutrients.
- 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

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

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

5- **Stop 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% of body weight 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

