

**Sheet no: 1**

**Refer to slide no. : Hypertension**

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***Hypertension***

***\* HTN is the most important disease that affects humans.***

***\* It starts spreading.***

***\* The likelihood of the disease is 30%-40% of the population.***

***\* It accounts for 13% of the total mortality around the world annually.***

***\* Some people say there is benign and malignant HTN, but HTN is always malignant because it’s dangerous.***

***\*Bad:***

***1- Most of the time people are not aware that they have HTN (don’t know).***

***2- It is a silent killer.***

***3- It is a masked killer: causes kidney failure, HF “heart failure”, CVA “Cerebrovascular accident”, MI “myocardial infarction”.***

***4- Financially: it is the most expensive disease.***

***\*BUT good:***

***1- It is preventive: changing the life style.***

***2- Has a very effective available cheap safe drugs (in comparison with the cancer drugs that are not effective and not safe).***

***\* 65 million in America have HTN and they are increasing.***

***\* If we don’t treat it, complications will happen. These complications cause important diseases.***

***\* Prevalence of the disease in the world:***

***- In America it’s less than other countries because they worked hard for 30 years.***

***- But notice that even the first world countries like and Germany the prevalence can reach 50%.***

***- In Jordan we can say it’s 30% or 35% for adults above 18 years old, but above 50 years old it becomes 50%, above 60 years old it becomes 60%. So with age the prevalence increases.***

***\* In comparison with other diseases HTN increases continuously, probably after 20 years old the prevalence becomes more than 50%.***

***\* There are important terms related to HTN: 1-Awareness. 2-Treatment. 3-Control.***

***\* Before this we have prevalence: It is 40% (نسبته بالمجتمع).***

***\* How many from this 40% are aware that they have HTN, in Japan it’s 16% only, in America (they work hard to educate people about HTN)it’s 70% (the best countryin the world). In Sweden, Germany, and Spainthe awareness is low.***

***\* Most of the people don’t know that they have HTN.***

***\* How many of the people who are aware are treated: in America it’s nearly the half, in England it’s 25% only (although they have an advanced health system).***

***\* The worst thing is control: to reach the target that we want (to prevent the complications of HTN).***

***\* In America the control is 30%, England is 10%.***

***\* So we have to improve the situation of this disease globally.***

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***\* Now, the awareness, treatment, and control are low.***

***\* In America they did campaigns that improves the situation.***

***-Awareness: in 70(s) it was 50%, now it becomes 70%.***

***- Control: in 70(s) it was 10%, now it becomes 35%.***

***\* Hyper pressure is the first killer in the world. The second one is smoking.***

***“Usually HTN and smoking are together”.***

***\* HTN is responsible for 12.8% (13%) (7.5 million) mortality in 2010.***

***\* What is HTN? HTN is hyper pressure, but not every hyper pressure is HTN.***

***\* Normal blood pressure is a parameter.***

***\* Blood pressure= cardiac output (CO)\* systemic vascular resistance (SVR).***

***\* So the interaction between heart and artries controls the blood pressure.(2 components):***

***1- The cardiac output controls the systolic blood pressure (high).***

***2- The reaction of the vessels (artries) on the blood controls the diastolic blood pressure (low).***

***\* HTN by the definition is hyper pressure.***

***\* HTN: is the level of blood pressure linked with a doubled increased long-term risk for adverse events. OR: the level of blood pressure at which the benefits of action (i.e therapeutic intervention) exceed those of inaction.***

***\* This person blood pressure is 400/200 which means that the device we use to measure the blood pressure can’t measure this number, but he didn’t have MI or brain damage because it is a physiological process, once he stop the weight lifting his blood pressure will come back to normal. So he has hyper pressure but not HTN.***

***\* So HTN is not only hyper pressure, it is an unjustified hyper pressure, not physiologic (like someone has a high blood pressure at the night and he is not angry, this is HTN).***

***\* Sometimes HTN has causes and sometimes not (primary and secondary).***

***\* HTN is a continuous high blood pressure.***

***\* Normal blood pressure is:***

***- systolic < 120mm Hg.***

***- Diastolic < 80 mm Hg.***

***\* HTN is :***

***- systolic > 140 mm Hg.***

***- Diastolic > 90 mm Hg.***

***\* Between them there is prehypertension:***

***- systolic 120-139 mm Hg.***

***- Diastolic 80-89 mm Hg.***

***\* HTN has divided into :***

***- Stage 1: 140-159 / 90-99 mm Hg.***

***- Stage 2: >160 / >100 mm Hg.***

***\* These numbers are according to JNC8 ( in the slide it is JNC7).***

***\*\*\* JNC: Joint National Committee.***

***\* What determines the degree is the higher whatever it is systolic or diastolic.***

***- If systolic > diastolic, systolic will determine the degree and vice versa.***

***\*Example:***

***- 145/110: stage 2.***

***- 160/80: stage 2.***

***\* The BHS classification is hard.***

***\* JNC has made improvements, JNC7 continued for 10 years and finished in 2014. JNC8 is until now.***

***\* In 90(s) JNC determined that the normal blood pressure is 140 not 160.***

***\* Previously the classification depended on the diastolic, now it depends on the higher value whether it is systolic or diastolic.***

***\* Systolic is more dangerous than diastolic.***

 ***\* JNC6:***

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***\* HTN depends on the interactions between the risk factors.***

***- For example 130/89 is normal but if the person has an established risk factors (like coronary vascular disease): It will be very dangerous.***

***- On the other hand someone with a very high blood pressure without risk factors (smoking, obesity, diabetis): it will be less dangerous.***

***- So two people with the same blood pressure can be no like each other.***

***\* If the person is prehypertensive or hypertensive, his treatment must start as life style modidications (stop smoking, weight reduction, decrease sugar eating, sport), BUT JNC7 said that:***

***- Stage 1: lifestyle modificstions with one drug everyday.***

***- Stage 2: lifestyle mosificatiions with two drugs everyday.***

***\* JNC8 that we depends on these days made a little changes like increasing the target of the normal blood pressure in people above 60 years old to reach 150/90, so we will treat the patient if his blood pressre is more than 150/90.***

***\*\*\*Good medical practice depends on:***

***1- Knowledge (evidence based, universal):***

***- A: systematic review, the highest.***

***-B: single study.***

***-C: case study (note sure).***

***-D: experts opinion.***

***2- Ethics (Local).***

***3- Experience (the interactions of ethics with knowledge, depends in the person).***

***\* We have to treat HTN (reach the target) to prevent fatal complications.***

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***\* Cardiovascular risks: hyperlipidemia, smoking.***

***\* Each 20 systolic, 10 diastolic increase in normal blood pressure, the cardiovascular risks will be doubled. "يخالف التعريف بالبداية"***

***\* From 115/75 to 135/85 the risk will be doubled although both of them are normal.***

***\* From 135/85 to 155/94 the risk will be 4 folds.***

***\* From 155/95 to 175/105 the risk will be 8 folds.***

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***\* If we reduce the blood pressure 2mm ONLY, we will decrease the stroke 10% and the cardiovascular risk 7%.***

***\* How does HTN comes? Usually it is asymptomatic.***

***\* The underlying cause of epistaxis may be the HTN, the same thing applies for headache. BUT the patient may have headache with a normal blood pressure and vice versa, so there is no strong correlation between this disease and the symptoms written in the slides.***

***\* HTN is a very common disease and it is the first killer then tobacco comes secondly.***

***\* So how can we measure blood pressure?***

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***- Mercury type is not the accurate and can give us variable readings during the day.***

***- The one that is used in ICU “MBSV monitory” is the most accurate and can give us definite readings.***

***- There is a type of machines that you can put it around your waist for the whole day 24 hours, but it is nit that accurate “ABPM”.***

***- The digital type is good for clinical usage.***

***\*Phantoscopy “note sure” is a useful method to diagnose HTN.***

***\* Blood pressure is normally variable, with each cardiac output or stroke volume it changes. So some machines have a button when you press it the machine by itself takes three readings then it deletes the first one and takes the average of the rest.***

***\* There is a very advanced machines that measure central pressure but we don’t have it!!!***

***\* Which is more accurate clinic or home readings (measuring)?***

***- If they were both the same (both high or both low) there is no problem, but if there is a difference we go for what we call “white coat or office hypertension”.***

***\* Normal blood pressure at home but high at clinic:***

***- 25% of females who attend the clinic for the first time have the white coat for mainlt the first five appointments.***

***\* High blood pressure at homebut normal at clinic:***

***- Reverse white coat (masked): dangerous type, 10% can’t be diagnosed in clinic.***

***\* So having a measuring device is mandatory at homes.***

***\*\*\* 140/85 at home : is high.***

***\* We have something called dipping that happens normally at night (totally normal).***

***\* Dipping: reduction in blood pressure (like 130 during day becomes 120 at night).***

***\* Some people don’t have dipping or in some situations blood pressure increases instead of decreasing, here the patient has HTN.***

***\* 90% of HTN cases are primary (environmental, lifestyle, hereditary).***

***\* 10% ofHTN cases are secondary causes: so you have to treat the cause first. Example: a woman that takes CCP.***

***\* Remember:***

***- Stage 1 and 2: lifestyle modifications and medications.***

***- Stage 3 and 4: management: hospitalization.***

***\*\*\*Clinic VS Home measurements:***

***- Both are high: hypertensive patient or uncontrolled HTN.***

***- Both are normal: normal or controlled HTN.***

***- Home normal, clinic high: (discrepancy)***

***Mis-diagnosed as hypertensive patient: something that doesn’t exist, cost and side effects (treatment).***

***- Home high, clinic normal: (discrepancy)***

***Mis-diagnosed as a healthy patient.***

***\* So there is a tendency not to take any measurements of blood pressure at clinic and give the patient a table to fill according to home measurements.***