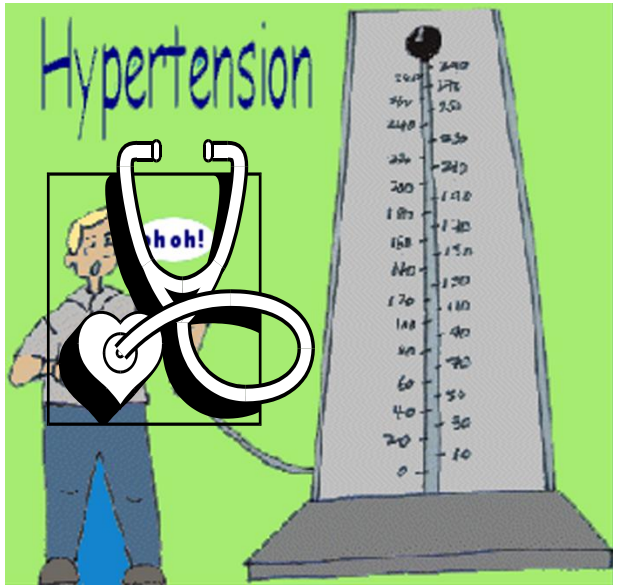
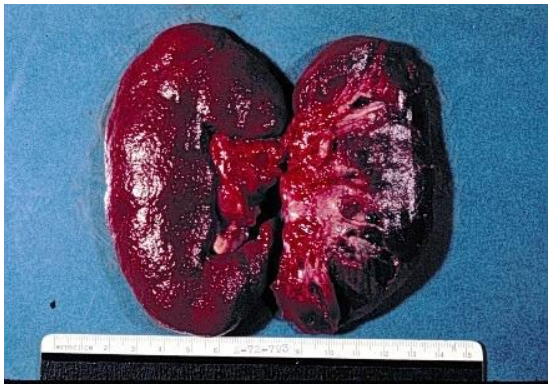
دراسة صحية تظهر ان 39% من عينتها يعانون من ضغط الدم

- الراي - اظهرت دراسة نفذتها وزارة الصحة بالتعاون مع شركة أسترا زينكا الدوائية ضمن حملة (سلامة قلبك للوقاية من الامراض القلبية والوعائية) ان معدل أنتشار ضغط الدم 39 بالمئة لجميع المشاركين في الحملة.
وبينت الدراسة التي اعلنت نتائجها اليوم الاثنين في مؤتمر صحافي خصص لهذه الغاية، ان5ر34 بالمئة من المشاركين فيها لديهم أحد أفراد الأسرة مصاب بمرض في القلب و3ر52 بالمئة عندهم اقارب يعانون من السكري.
وكشفت الدراسة التي اجريت في محافظات عمان واربد والزرقاء على مواطنين ضمن الفئة العمرية25 عاما فما فوق، أن أكثر من90 بالمئة من المواطنين يعرفون بخطورة إرتفاع ضغط الدم والسكري والكوليستيرول بالتسبب بالأصابة بأمراض القلب ولكن هذا لا ينطبق على ممارساتهم للوقاية من هذة الأمراض اذ أن نسبة كبيرة منهم8ر41 بالمئة لم يقوموا بقياس ضغط الدم خلال السنة الماضية. وبينت الدراسة كذلك ان7ر52 بالمئة من المشاركين لم يقوموا بفحص سكر الدم وان4ر70 بالمئة لم يجروا فحص الكوليستيرول ايضا خلال العام الماضي

Hypertension: The Silent Killer





CRITICAL POINT!

Hypertension- asymptomatic

Morbidity and mortality due to end organ damage

congestive heart failure, myocardiac infarction, renal damage, cerebrovascular accidents.

Hypertension as a disease

- **Most of the international committees classified hypertension in four categories:**

JNC 6 Category	SBP/DBP	JNC 7 Category
Optimal	< 120/80	→ **Normal**
Normal	120–129/80–84	→ **Prehypertension**
Borderline	130–139/85–89	
Hypertension	≥ 140/90	→ **Hypertension**
Stage 1	140–159/90–99	→ Stage 1
Stage 2	160–179/100–109	→ Stage 2
Stage 3	≥ 180/110	

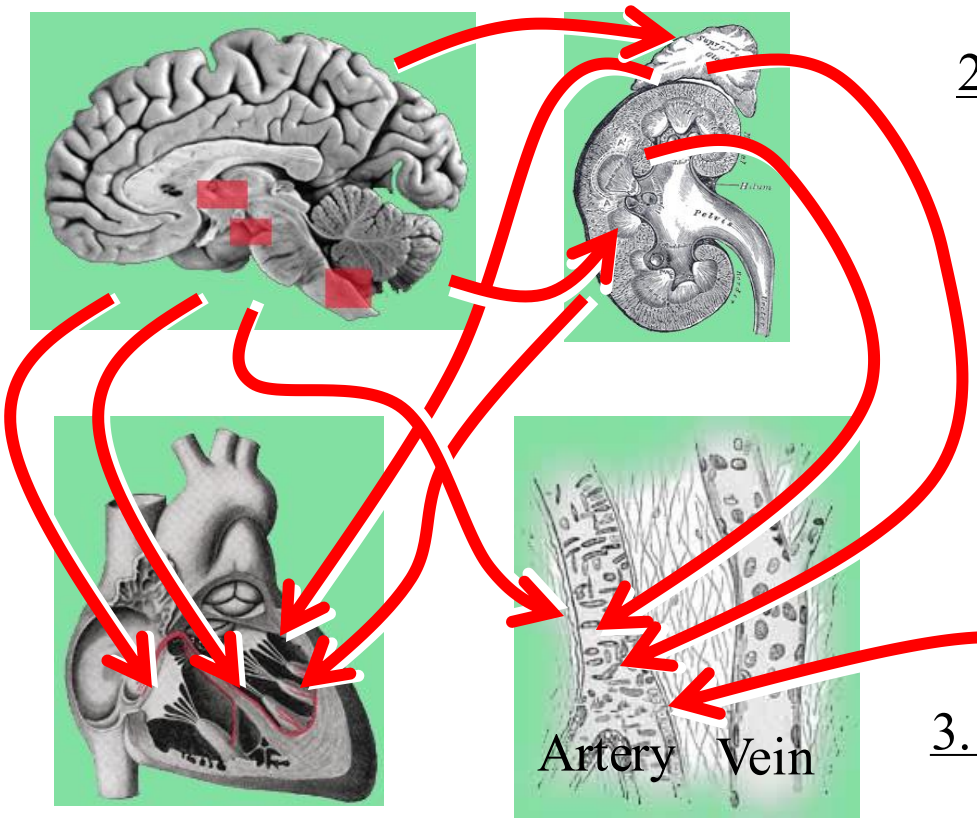
Lifestyle Modification

Modification	Approximate SBP Reduction (range)
Weight reduction	5-20 mmHg/ 10 kg weight loss
Adopt DASH eating plan	8-14 mmHg
Dietary sodium reduction	2-8 mmHg
Physical activity	4-9 mmHg
Moderation of alcohol consumption.	2-4 mmHg

JNC 7 Express. JAMA. 2003 Sep 10; 290(10):1314

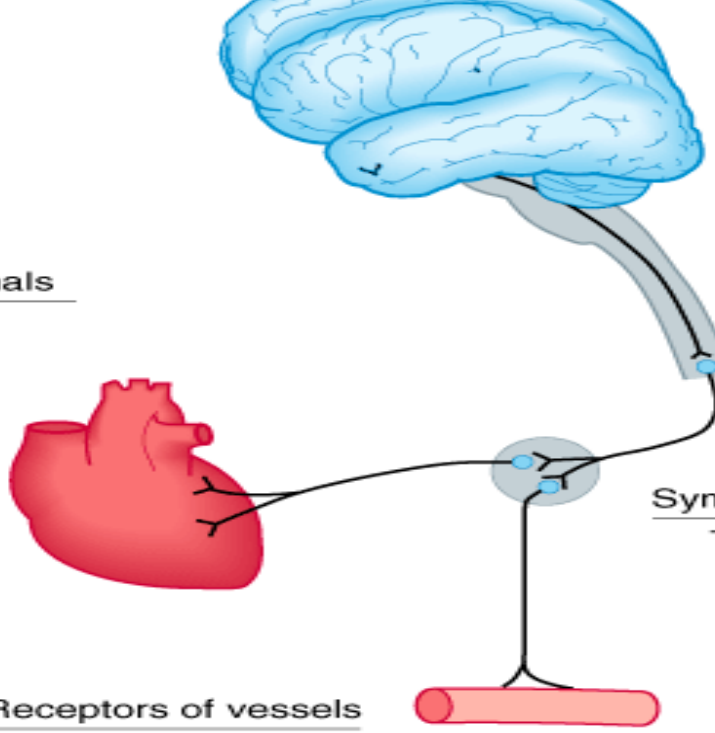
Mechanisms Controlling CO and TPR

1. Neural
   SymNS
   PSNS



2. Hormonal
   Renal
      Ang II
   Adrenal
      Catecholamines
      Aldosterone

3. Local Factors



Vasomotor center
Methyldopa
Clonidine
Guanabenz
Guanfacine

Sympathetic nerve terminals
Guanethidine
Guanadrel
Reserpine

β-Receptors of heart
Propranolol and other β-blockers

Sympathetic ganglia
Trimethaphan

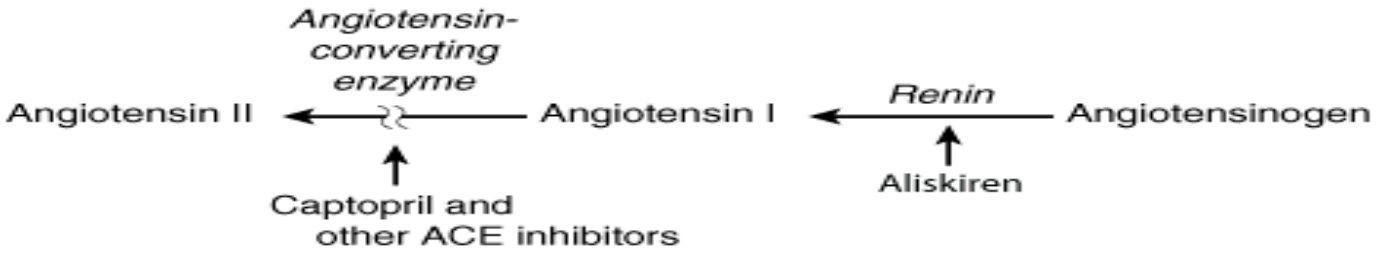
Angiotensin receptors of vessels
Losartan and other angiotensin receptor blockers

α-Receptors of vessels
Prazosin and other α_1-blockers

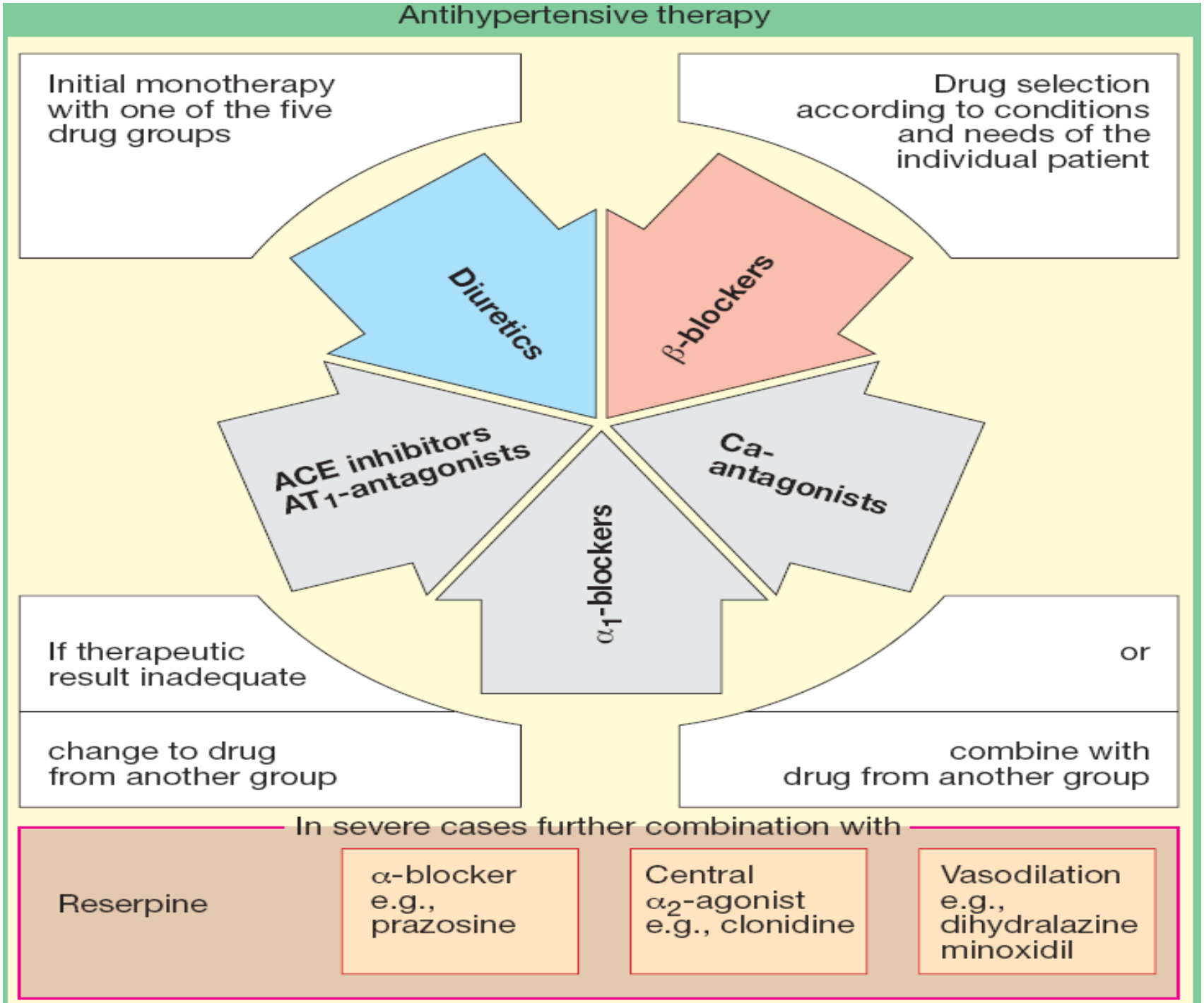
Vascular smooth muscle
Hydralazine
Minoxidil
Nitroprusside
Diazoxide
Verapamil and other calcium channel blockers
Fenoldopam

Kidney tubules
Thiazides, etc

β-Receptors of juxtaglomerular cells that release renin
Propranolol and other β-blockers



Source: Katzung BG, Masters SB, Trevor AJ: *Basic & Clinical Pharmacology, 11th Edition:* http://www.accessmedicine.com


Antihypertensive therapy
Initial monotherapy with one of the five drug groups
Drug selection according to conditions and needs of the individual patient
Diuretics
β-blockers
ACE inhibitors
AT1-antagonists
Ca-antagonists
α1-blockers
If therapeutic result inadequate
or
change to drug from another group
combine with drug from another group
In severe cases further combination with
Reserpine
α-blocker e.g., prazosine
Central α2-agonist e.g., clonidine
Vasodilation e.g., dihydralazine minoxidil

Monotherapy or combination

- Monotherapy of hypertension (treatment with a single drug) is desirable because compliance is likely to be better and cost is lower, and because in some cases adverse effects are fewer.

- However, most patients with hypertension require two or more drugs, preferably acting by different mechanisms (polypharmacy).

What to choose first?

- Initial antihypertensive therapy without compelling indications
  - JNC 6: Diuretic or a beta-blocker
  - JNC 7: Thiazide-type diuretics
- Most outcome trials base antihypertensive therapy on thiazides

JNC 7 Express. JAMA. 2003 Sep 10; 290(10):1314

Diuretics

- Diuretics are effective in lowering blood pressure by 10–15 mm Hg in most patients, and diuretics alone often provide adequate treatment for mild or moderate essential hypertension.

- In more severe hypertension, diuretics are used in combination with sympathoplegic and vasodilator drugs to control the tendency toward sodium retention caused by these agents.

Thiazide Diuretics

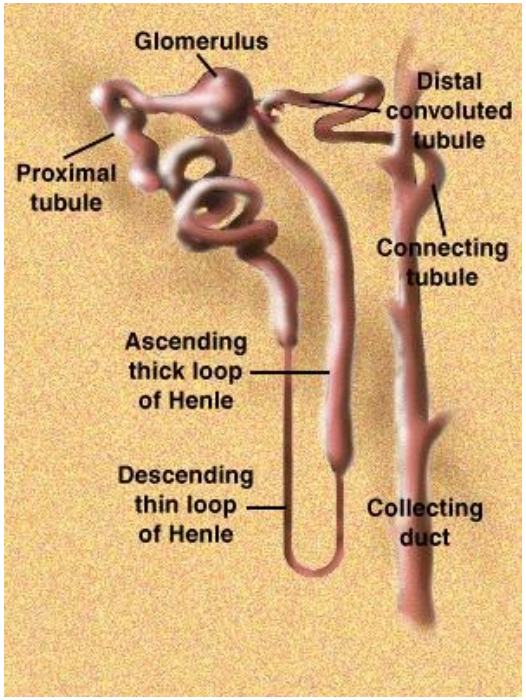
- Diuretics lower blood pressure primarily by depleting body sodium stores.
- Initially, diuretics reduce blood pressure by reducing blood volume and cardiac output; peripheral vascular resistance may increase.
- After 6–8 weeks, cardiac output returns toward normal while peripheral vascular resistance declines.
- Sodium is believed to contribute to vascular resistance by increasing vessel stiffness and neural reactivity, possibly related to altered

Diuretics (cont)

2. Mechanism of Action

↑ Urinary Na+ excretion
↑ Urinary water excretion

↓ Extracellular Fluid
↓ and/or Plasma Volume



3. Effect on Cardiovascular System

↓ Acute decrease in CO

↓ Chronic decrease in TPR, normal CO
Mechanism(s) unknown

Thiazide diuretics

- lower doses (25–50 mg) exert as much antihypertensive effect as do higher doses.

- In contrast to thiazides, the blood pressure response to loop diuretics continues to increase at doses many times greater than the usual therapeutic dose.

Thiazide diuretics

- **Decrease blood pressure in supine and standing position, and postal hypotension is rarely observed except in elderly.**

- **There are many analogs, but the most important prototypes are:**

  - **Chlorothiazide, given orally 1-2 times a day.**

  - **Hydrochlorothiazide, 1-2 times a day.**

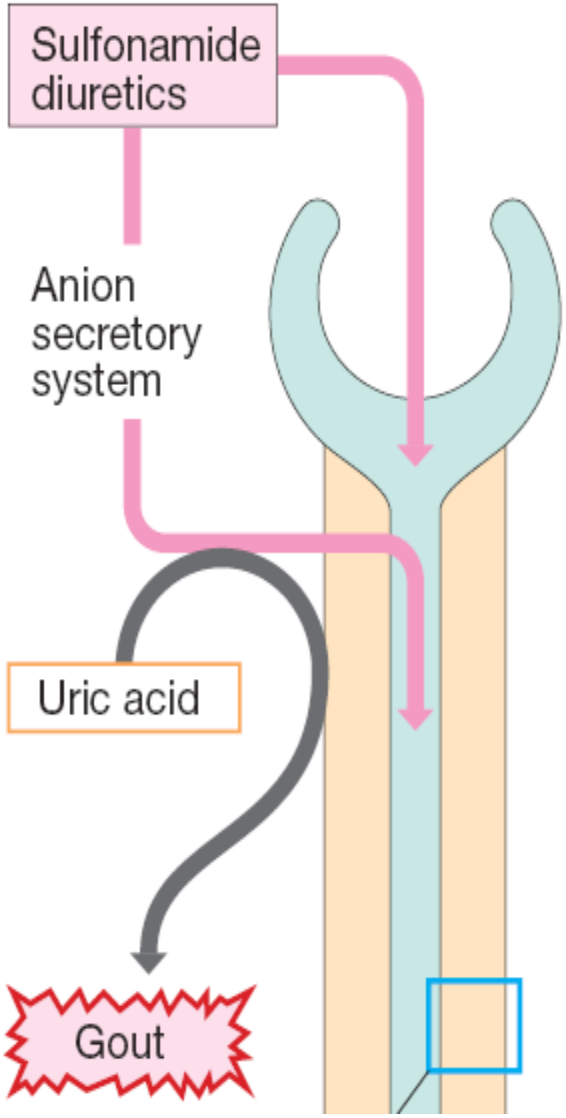
Thiazide diuretics

Adverse effect includes:

- **hypokalermia (70% of patients), thus a potassium supplementation is recommended.**

- **hyperuricemia (70% of patients), result from the inhibition of renal tubular secretion of uric acid.**

- **hyperglycemia (10% of patients), may interfere with the conversion of pro-insulin to insulin.**



Side effect

- mild degrees of hypokalemia are tolerated well by many patients, hypokalemia may be hazardous in persons taking digitalis, those who have chronic arrhythmias.

- Potassium loss is coupled to reabsorption of sodium, and restriction of dietary sodium intake therefore minimizes potassium loss.

Loop diuretics

- Furosemide, ethacrynic acid, and bumetanide, produce greater diureses than thiazides, but they have weaker anti-hypertensive effect and cause severe electrolyte imbalance.

- Typically only beneficial in patients with

    1. resistant HTN and evidence of fluid;

    2. effective if CrCl <30 ml/min

- MUST be dosed at least twice daily (Lasix = Lasts six hours)
- Administer AM and lunch time to avoid nocturia

- **Adverse effects of the loop diuretics summarized in**

  -Ototoxicity, specially when used with aminoglycosides.

  -hyperurecemia.

Hypocalcemia	**loop**
hypercalcemia	**thiazide**

β-adrenergic blocking agents

- **The various β blockers all appear to be equally effective for the treatments of hypertension.**

- **Propranolol, Timolol, Nadolol, Pindolol, Penbutolol, carvedilol, are nonselective,**

- **while Metoprolol, Acebutolol, and Atenolol, Esmolol are Cardioselective, sotalol.**

- **Adverse effects,**

Dizziness, sudden weight gain , irregular heart beat.

congestive heart failure, asthma (non-selective), hypoglycemia (non-selective) in patient with diabetes mellitus.

Beta blockers

- Metoprolol and atenolol, which are cardioselective, are the most widely used blockers in the treatment of hypertension.

- Pindolol, acebutolol, and penbutolol are partial agonists, ie, blockers with some intrinsic sympathomimetic activity. They lower blood pressure by decreasing vascular resistance and appear to depress cardiac output or heart rate less than other blockers. this may be particularly beneficial for patients with bradyarrhythmias or peripheral vascular disease.

- Labetalol, Carvedilol cause of its combined - and -blocking activity, labetalol is useful in treating the hypertension of pheochromocytoma and hypertensive emergencies.

Esmolol

- Esmolol has a short half-life (9–10 minutes) and is administered by constant intravenous infusion.

- Esmolol is used for management of intraoperative and postoperative hypertension,

- and sometimes for hypertensive emergencies, particularly when hypertension is associated with tachycardia.

Indications for beta blockers include

- Angina pectoris
- Atrial fibrillation
- Cardiac arrhythmia
- Congestive heart failure
- Essential tremor
- Glaucoma
- Hypertension
- Migraine prophylaxis
- Mitral valve prolapse
- Phaeochromocytoma, in conjunction with α-blocker
- Symptomatic control (tachycardia, tremor) in anxiety and hyperthyroidism

β-adrenergic blocking agents

- **sudden withdrawal may cause rebound hypertension,**
- **The withdrawal syndrome may involve up-regulation or supersensitivity of beta receptor adrenoceptors.**
- **So the removal should therefore be gradual to avoid precipitation of arrhythmia**

ACE Inhibitors

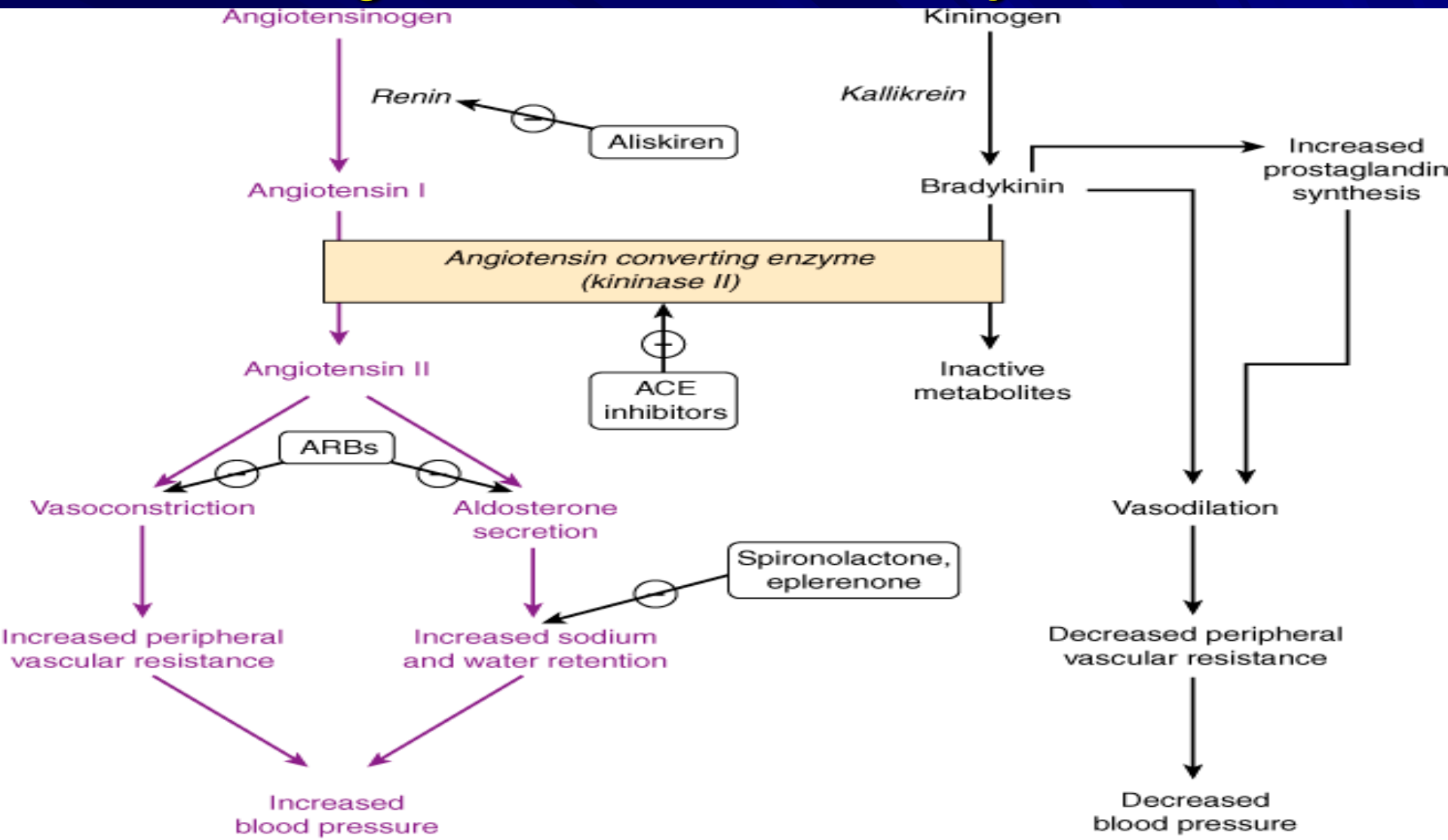
- **ACE Inhibitors, such as Enalapril, Lisinopril, and Captopril are recommended when the preferred first line agents (diuretics or β blockers) are contraindicated or ineffective.**

- **They lower the blood pressure by reducing peripheral vascular resistance without reflexively increasing cardiac output.**

- **The block the ACE that cleaves angiotensin I to form the potent vasoconstrictor angiotensin II. Moreover, ACE is also responsible for the breakdown bradykinin (endogenous vasodilator).**

- **Benazepril, fosinopril, moexipril, perindopril, quinapril, ramipril,** and **trandolapril**

Sites of action of drugs that interfere with the renin-angiotensin-aldosterone system.



Source: Katzung BG, Masters SB, Trevor AJ: *Basic & Clinical Pharmacology, 11th Edition:* http://www.accessmedicine.com

ACE Inhibitors

-Dry cough occurs in 10% of patients and thought to be due to increase level of bradykinin in the pulmonary tree.

-Potassium level should be monitored and spironolactone (Prevent potassium secretion) is contraindicated.

-Angioedema is rare but a potential life-threading reaction (may be caused by bradykinin).

-Because of the risk of first-dose syncope, and the angioedema ACE inhibitors are first administrated under the doctor observation.

- Contraindications pregnancy

- **ACE inhibitors have a particularly useful role in treating patients with chronic kidney disease because they diminish proteinuria and stabilize renal function (even in the absence of lowering of blood pressure).**

- **This effect is particularly valuable in diabetes, and these drugs are now recommended in diabetes even in the absence of hypertension.**

ACEI

- These benefits probably result from improved intrarenal hemodynamics, with decreased glomerular efferent arteriolar resistance and a resulting reduction of intraglomerular capillary pressure.

- ACE inhibitors have also proved to be extremely useful in the treatment of heart failure, and after myocardial infarction.

Angiotensin II-receptors antagonists

- These agents are alternatives to the ACE Inhibitors, and can be used in patient who cannot tolerate ACE Inhibitors. **Losartan** being the prototype.

- Their pharmacologic effects are Similar to ACE Inhibitors (vasodilation, block aldesterone secretion), however they do not increase the bardykinin levels.

- Their adverse effect are similar to ACE Inhibitor, although the risks of cough and angioedema are significantly decreased.

- **Candesartan, eprosartan, irbesartan,telmisartan, and olmesartan**

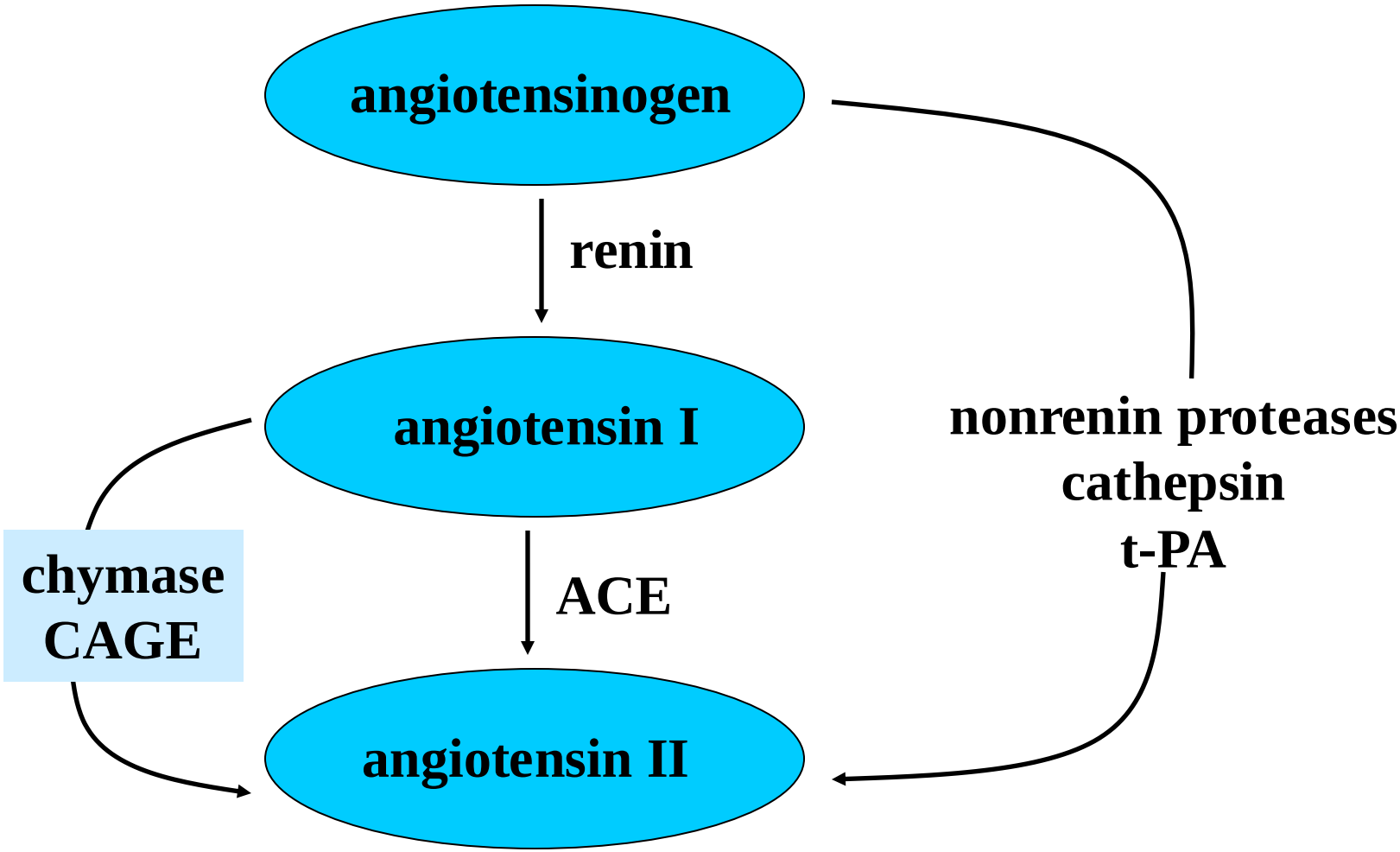
- these drugs lower blood pressure as the ACE inhibitors and have the

advantage of much lower incidence of adverse effects resulting from

accumulation of bradykinin (cough, angioneurotic oedema)

- they **cause fetal** renal toxicity (like that of the ACE inhibitors)

- these drugs reduce aldosterone levels and cause **potassium accumulation** (attainment of toxic levels - hazardous in patients with renal impairment).


angiotensinogen
renin
angiotensin I
ACE
angiotensin II
chymase
CAGE
nonrenin proteases
cathepsin
t-PA