

Heart failure is the inability of the heart to maintain sufficient ____ despite good ____ return.

cardiac output, venous

Heart failure is a complex clinical ____ that can result from any structural or functional cardiac ____ that impairs the heart's ability.

syndrome, disorder

Systolic heart failure is also known as ____ and is characterized by a reduced ejection ____.

HFrEF, fraction

Diastolic heart failure is referred to as ____ and involves the heart's inability to fill properly with ____.

HFpEF, blood

The ejection fraction is calculated as ____ divided by ____ volume.

stroke volume, end-diastolic



In heart failure, increased preload can be caused by ___ and ___ conditions.

AR, MR, VSD

Right-sided heart failure is often associated with ___ and ___ due to hyperdynamic circulation.

TR, PR



Increased afterload in left-sided heart failure can result from ___ and ___ hypertension.

AS, systemic hypertension

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YOUR BEST WAY

Decreased contractility in heart failure can be due to ___ and ___ conditions.

coronary ischemia, cardiomyopathy

Left-sided heart failure can be classified by increased preload, increased afterload, and ___ contractility.

decreased

Drug-induced heart failure can be caused by ___ and ___.

alcoholism, drug abuse

Common symptoms of heart failure include ___ and ___.

shortness of breath, physical fatigue

Signs of heart failure may include ___ and ___.

tachycardia, tachypnea



A structural abnormality of the heart can be indicated by ___ such as ___.

evidence, cardiomegaly

Drugs associated with hyperkalemia include ___ and ___.

potassium supplements, sodium-containing preparations

In heart failure, preload is associated with ___ overload and can lead to ___ dilatation.

volume, cardiac

Drugs that decrease afterload include ___ and ___ which help reduce tension overload.

arteriodilators, ACEIs

Tachycardia refers to an increased ___ rate, which can be managed by drugs that decrease ___ rate.

heart, heart

Cardiac glycosides and phosphodiesterase inhibitors are types of ___ that improve cardiac ___.

inotropics, contractility

Drugs that decrease both preload and afterload include ___ and ___ which are commonly used in heart failure treatment.

ACEIs, ARBs



In treating heart failure with reduced ejection fraction (HFrEF), the first line drugs include ___ and ___.

ACEI, ARNI

For heart failure with volume overload, the primary treatment options are ___ and ___ drugs.

Diuretics, positive inotropic



The mineralocorticoid receptor antagonist used in heart failure therapy is also known as ___ and ___.

MRA, aldosterone antagonist

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Sodium-glucose cotransporter 2 inhibitors are abbreviated as ___ and are used in heart failure treatment along with ___ drugs.

SGLT-2, diuretics

Beta blockers and ___ are important first line treatments for heart failure with reduced ejection fraction, alongside ___ inhibitors.

ivabradine, SGLT-2

ACE inhibitors and angiotensin receptor blockers are considered first-line drugs for ___ therapy, along with ___ and diuretics.

heart failure, digitalis

ACE inhibitors like captopril and enalapril work by reducing ___ and ___ levels in the body.

angiotensin II, aldosterone

The effects of ACE inhibitors include decreased peripheral resistance (___) and decreased venous return (___).

Afterload, Preload



Angiotensin receptor blockers such as losartan and valsartan help to reduce ___ remodeling and lower ___ rates.

cardiac, mortality

The inhibition of RAAS by ACE inhibitors leads to a decrease in ___ resistance and a decrease in ___ return.

peripheral, venous

Angioedema is a rare side effect of ACE inhibitors caused by elevated plasma ____ and ____.

bradykinins, dry cough

The adverse effects of ACE inhibitors include ____ and ____.

dry cough, hypotension

ACE inhibitors work by inhibiting the conversion of Angiotensin I to ____ and promoting ____.

Angiotensin II, vasodilation

Patients who cannot tolerate ACE inhibitors may be prescribed ____ which are typically ____ effective.

ARBs, less

The mechanism of action of ACE inhibitors involves the inactivation of ____ and the release of ____.

aldosterone, bradykinin



Beta-adrenoceptor blockers help in heart failure by reducing ____ toxicity and inhibiting ____ release.

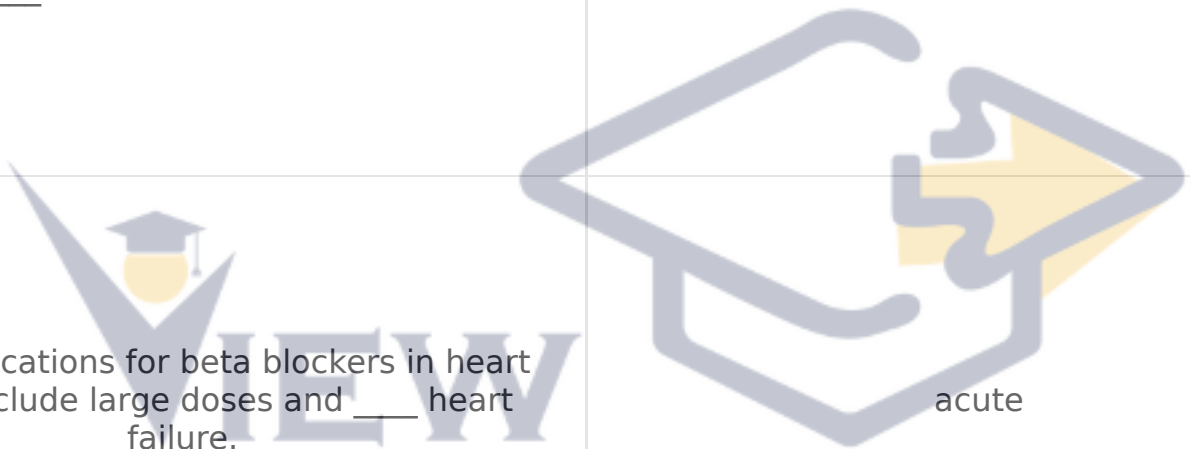
catecholamine, renin

In heart failure, beta blockers can decrease ____ rate and mortality rate, but may cause ____ as an adverse effect.

heart, hypotension

Contraindications for beta blockers in heart failure include large doses and ____ heart failure.

acute



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Approved beta blockers for stable heart failure in small doses include Bisoprolol, Metoprolol, and ____.

Carvedilol

Adverse effects of beta blockers in heart failure can include bradycardia and ____ block.

A-V

Vasodilators are indicated for patients who are intolerant to ___ and ___ in heart failure.

ACEIs, ARBs

Hydralazine is a direct acting vasodilator that reduces both right and left ventricular ___ by decreasing pulmonary and systemic vascular ___.

afterload, resistance



The use of hydralazine results in increased cardiac ___ and reduces renal vascular ___ in heart failure patients.

output, resistance

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Among vasodilators, hydralazine increases renal blood flow more than any other vasodilator except for ___ inhibitors.

ACE

Nitrates are used in CHF to reduce ___ and promote ___ artery dilatation.

preload, coronary

The efficacy of nitrates alone is limited due to ____ and ____ tolerance.

limited effect on systemic resistance, nitrate

Combining nitrates with other vasodilators, like ____ and ____, can improve results in heart failure.

hydralazine, isosorbide dinitrate



The fixed-dose combination of hydralazine and isosorbide dinitrate is known as ____ and can improve ____ in heart failure cases.

Bidil, mortality

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Nitrates help in CHF by causing ____ and are often used in combination to overcome ____ effects.

venodilation, limited

In heart failure treatment, diuretics help to remove signs of ____ and reduce ____ retention.

volume overload, salt and water

Loop diuretics like ___ are the most powerful and commonly used for heart failure patients, while ___ diuretics are less effective.

furosemide, thiazide

The main side effects of diuretics include metabolic ___ and electrolyte ___ such as hypokalemia.

alkalosis, imbalance

Diuretics in heart failure aim to reduce ventricular ___ and venous ___ to improve cardiac performance.

preload, pressure



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ACADEMY

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While diuretics help manage heart failure symptoms, they do not improve the ___ rate in patients.

mortality

Spironolactone is a type of diuretic that helps to preserve ___ and prevent ___ in patients with heart failure.

K+, hypokalemia

The main advantages of spironolactone include decreasing mortality in severe ____ and reversing ____-induced remodeling.

HF, aldosterone

Triamterene and amiloride are examples of weak diuretics that aim for volume reduction with minimal ____ loss and are classified as ____ diuretics.

K+, K+

The recommended dose of lasilactone, which contains furosemide and spironolactone, is one tablet of ____ mg taken in the morning for ____ days a week.

50, 5



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A common side effect of spironolactone is ____ which can affect men, indicating hormonal changes due to the drug's action on ____ receptors.

gynecomastia, aldosterone

Inotropic drugs like cardiac glycosides include ____ and ____.

Digoxin, digitoxin

Phosphodiesterase inhibitors such as ___ and ___ are used in heart failure treatment.

Amrinone, milrinone

The beneficial effects of digoxin in heart failure include increased ___ and decreased ___.

C.O.P, heart size

Digoxin helps in heart failure by increasing renal blood flow and inhibiting ___ to relieve ___.

RAAS, edema

Bradycardia caused by digoxin leads to increased ___ time and improved ___ in heart failure patients.

filling, tissue hypoxia

The process of Na^+ and Ca^{++} exchange involves the movement of ___ ions into the cell and ___ ions out of the cell.

Na^+ , Ca^{++}



In muscle contraction, troponin interacts with ___ and ___ to facilitate the process.

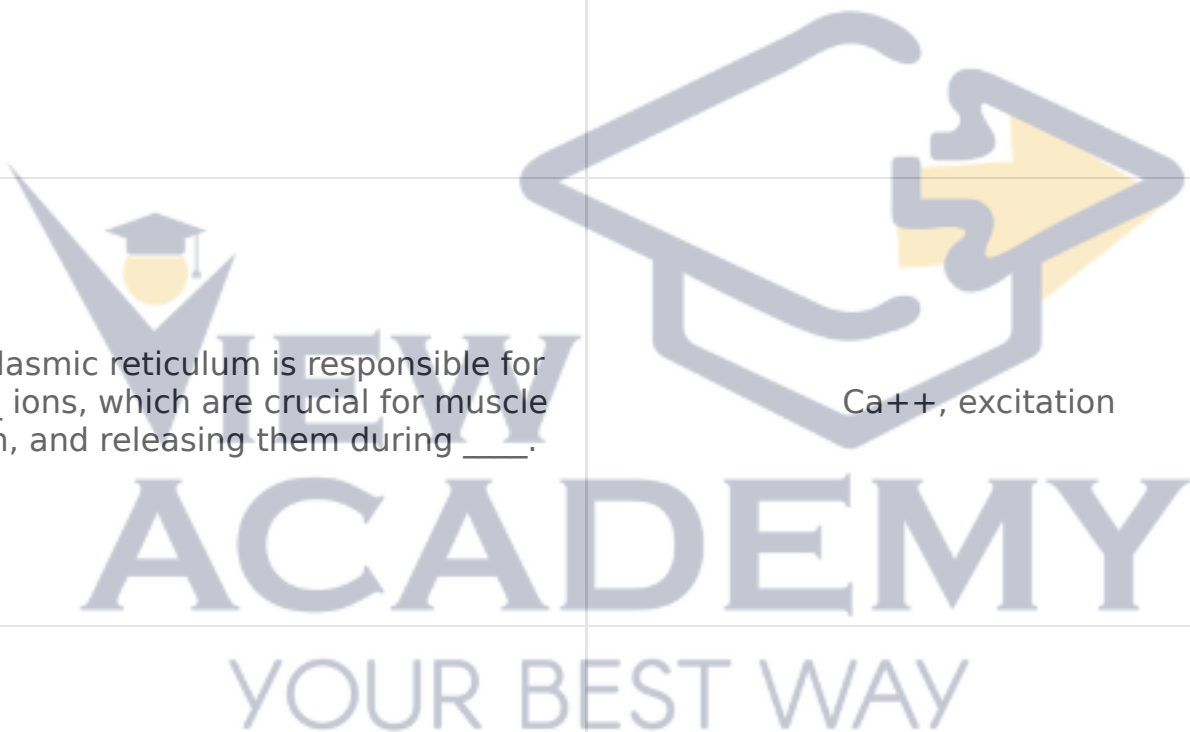
Actin, Myosin

Digitalis is concentrated in the myocardium at a level ___ times more than in other tissues.

15

The sarcoplasmic reticulum is responsible for storing ___ ions, which are crucial for muscle contraction, and releasing them during ___.

Ca⁺⁺, excitation



The force of contractility in cardiac muscle is influenced by the levels of ___ and ___ in the intracellular environment.

Na⁺, Ca⁺⁺

Digitalis increases intracellular free Ca²⁺ in ___ during ___.

CARDIAC CELL, systole

The mechanism of Digitalis involves the inhibition of _____ by competition with _____.

Na⁺/K⁺ ATPase, K⁺

Increased cardiac contractility is facilitated by the coupling of _____ and _____ due to Digitalis action.

actin, myosin

Hypokalemia can increase Digitalis toxicity because it _____ the Na⁺/K⁺ ATPase, while _____ can improve its toxicity.

inhibits, K⁺ administration



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Digitalis leads to partial inhibition of Na⁺/K⁺ ATPase enzyme at _____ doses.

therapeutic

Digitalis increases intracellular free Ca²⁺ in cardiac cells by inhibiting the membrane bound _____ enzyme, which increases intracellular _____ and free intracellular Ca²⁺.

Na⁺ K⁺ ATPase, Na⁺

One way Digitalis affects cardiac cells is by facilitating the entry of Ca^{+2} during the _____ of the action potential, which is crucial for _____ contraction.

plateau, cardiac

Digitalis may also enhance the release of stored Ca^{+2} from the _____ reticulum, contributing to increased _____ levels in cardiac cells.

sarcoplasmic, Ca^{+2}

The mechanism of Digitalis involves increasing intracellular Na^{+} by inhibiting Na^{+} K^{+} ATPase, which subsequently leads to an increase in _____ and affects _____ function.

free intracellular Ca^{+2} , cardiac

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In cardiac cells, Digitalis can increase intracellular free Ca^{+2} by directly facilitating Ca^{+2} entry and by enhancing the release from the _____ reticulum during the _____ phase.

sarcoplasmic, plateau

Increased contractility leads to a rise in _____ and a positive effect on _____.

cardiac output, inotropic

A decrease in heart rate is associated with ___ stimulation and is considered a ___ effect.

vagal, negative chronotropic

Conductivity is negatively affected by a decrease in ___ in the AV node, leading to a ___ effect.

conduction velocity, negative dromotropic

Increased automaticity can result from the presence of ___ foci, which may lead to ___ in the heart.

ectopic, arrhythmia



Improved renal perfusion results in the excretion of retained ___ and ___, affecting kidney function.

salt, water

In an ECG, digitalis treatment is indicated by the prolongation of the ___ interval and a high ___ wave.

P-R, R

Digitalis can cause a depressed ___ segment and an inverted ___ wave on an ECG.

S-T, T

Bradycardia and any type of ___ are effects of digitalis on the ECG, including pulsus ___ or ___.

arrhythmia, bigemini, trigemini

The effects of digitalis on the ECG include atrial depolarization and ventricular ___ followed by ___.

contraction, repolarization

An ECG showing digitalis effects may reveal a high R wave, a prolonged P-R interval, and ___ T wave inversion, indicating treatment but not toxicity.

inverted

Digoxin is commonly used to treat ___ heart failure in patients with ___ HFrEF.

congestive, mild to moderate



In cases of CHF, Digoxin is effective for managing cardiac ___ such as atrial ___ and atrial flutter.

arrhythmias, fibrillation

The standard dose of Lanoxin for Digoxin is ___ mg taken once in the morning after ___ for 5 days a week.

0.25, breakfast

For severe heart failure, the loading dose of Digoxin can be ___ tablets taken ___ daily for 2 days.

2, twice



After the loading dose, patients will transition to a ___ dose of Digoxin to maintain ___ levels.

maintenance, therapeutic

Patients with ___ and ___ should avoid certain medications due to absolute contraindications.

heart block, WPW syndrome

Conditions like ___ and ___ are considered relative contraindications for specific treatments.

bradycardia, systemic hypertension

In cases of ___ or ___ impairment, caution is advised when prescribing certain drugs.

renal, hepatic

Patients with ___ and ___ may experience complications if treated with beta blockers or verapamil.

myxedema, sick sinus syndrome



Absolute contraindications include ___ and ___ which can lead to serious health risks.

ventricular arrhythmia, hypertrophic obstructive cardiomyopathy

Digitalis absorption can be decreased by ___ and ___.

antacids, cholestyramine

The first signs of digoxin toxicity in the GIT
are ____ and ____.

nausea, vomiting

