

# What is Coronary Circulation?

## Worksheet

The heart is supplied by the right coronary artery (RCA) and left coronary artery (LCA, which splits into the LAD and circumflex), arising from the aortic sinuses just above the aortic valve and distributing blood to specific myocardial territories.

## Questions

1. Which artery most commonly supplies the SA node?

- A) Left anterior descending
- B) Circumflex artery
- C) Right coronary artery (in right-dominant hearts)
- D) Great cardiac vein

2. ST elevation in leads V1-V4 suggests occlusion of:

- A) Right coronary artery
- B) Left anterior descending (LAD)
- C) Circumflex artery
- D) Coronary sinus

3. Coronary arteries fill primarily during:

- A) Systole
- B) Diastole
- C) Isovolumetric contraction
- D) Atrial systole only

4. Coronary venous blood returns to the heart mainly via:

- A) Superior vena cava
- B) Coronary sinus into the right atrium
- C) Pulmonary veins
- D) Inferior vena cava

5. A patient has an ST-elevation MI with changes in leads V1-V4. Which artery is most likely occluded?

6. In about 85% of people, which artery supplies the SA node and AV node?

7. Why do coronary arteries fill mainly during diastole rather than systole?

8. Define: What are the two main coronary arteries?

9. Define: What does the LAD supply?

10. Define: What does the circumflex artery supply?

## Answer Key

1. C) Right coronary artery (in right-dominant hearts) - In ~85% of people (right-dominant), the RCA gives rise to the SA nodal artery.
2. B) Left anterior descending (LAD) - V1-V4 correspond to the anteroseptal territory supplied by the LAD.
3. B) Diastole - Myocardial compression during systole blocks flow; diastolic relaxation allows coronary filling.
4. B) Coronary sinus into the right atrium - Most cardiac veins converge into the coronary sinus, which empties into the right atrium.
5. V1-V4 reflect the anterior/septal wall of the left ventricle The LAD (left anterior descending) supplies the anterior wall and interventricular septum Conclusion: LAD occlusion is most likely
6. This pattern is called 'right dominant' circulation, present in ~85% of people The right coronary artery (RCA) gives off the SA nodal and AV nodal arteries in right-dominant hearts Occlusion of the proximal RCA can therefore cause bradyarrhythmias or heart block
7. During systole, the contracting myocardium compresses the intramural coronary vessels, especially in the left ventricle Aortic valve cusps also partly cover the coronary ostia during systole During diastole the myocardium relaxes and aortic pressure drives blood into the relaxed coronary arteries - so most coronary flow happens in diastole
8. The right coronary artery (RCA) and left coronary artery (LCA), both arising from the aortic sinuses.
9. The anterior wall of the left ventricle and the interventricular septum.
10. The lateral and posterior walls of the left ventricle.

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