

Chronopharmacology

Time-Dependent Pharmacotherapy

Editors

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Afreen Usmani

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4 | Chronotherapy in Cardiovascular Disease

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Chronotherapy, aligning medication timing with the body's biological rhythms, shows promise in improving cardiovascular disease (CVD) treatment. By tailoring drug schedules to circadian patterns in blood pressure, heart rate, and coagulation, it enhances therapeutic effectiveness while reducing side effects. This approach is explored in managing conditions like hypertension, heart failure, myocardial infarction, and arrhythmias.

The chapter explores how circadian rhythm disruptions impact cardiovascular health and disease progression. It highlights the pharmacokinetics and pharmacodynamics of cardiovascular drugs, emphasizing optimized dosing schedules. For instance, nighttime antihypertensives better manage morning blood pressure surges, while evening statin use aligns with peak cholesterol synthesis for improved lipid control. This chapter explores practical aspects of chronotherapy, including challenges like patient adherence and variability in circadian responses. It also highlights advancements in personalized chronotherapy, such as wearable devices and digital tools for monitoring rhythms, paving the way for customized treatment plans.

This chapter examines the science of chronotherapy in cardiovascular care, providing healthcare professionals with insights on how strategic medication timing enhances patient outcomes. With increasing evidence of its benefits, chronotherapy could revolutionize cardiovascular treatment, offering more personalized and effective approaches for chronic conditions.

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