

Reading the Electrical Story of the Heart

Understanding the Electrocardiogram (ECG)
and the Cardiac Cycle



The Tool vs. The Trace

The Equipment

Electrocardiograph

The clinical monitoring machine that captures the heart's voltage traces.



The Output

Electrocardiogram (ECG)

The graphical representation of the heart's electrical activity during a single cardiac cycle.



STANDARD_3_LEAD_SETUP

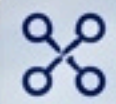
To obtain a standard ECG, the patient is connected via three electrical leads:



1. Right Wrist



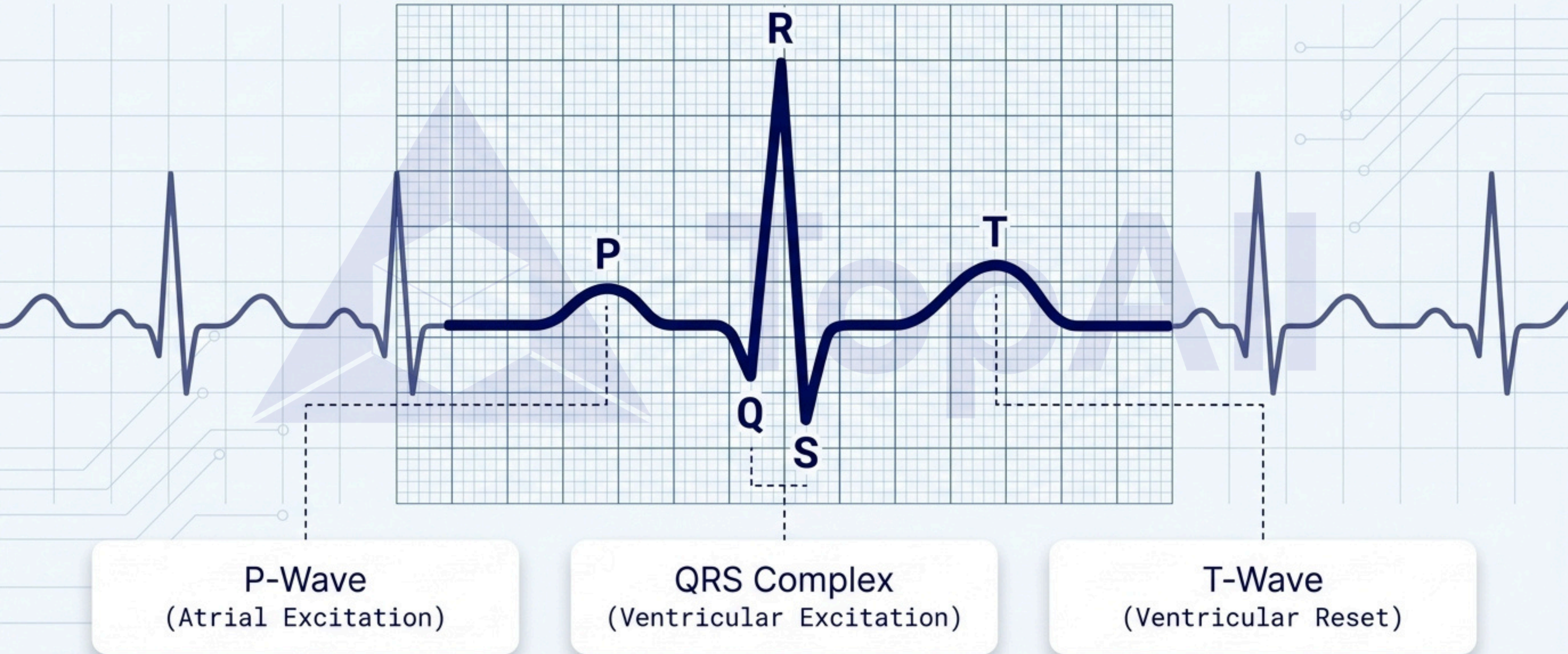
2. Left Wrist



3. Left Ankle

Multiple chest leads are added only for detailed, advanced evaluations of heart function.

The Master Blueprint: Figure 15.3





**You've Learned the Theory.
Let's Test Them Now.**

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

Practice Now



At prep.topall.app

Key Highlights

- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



P-Wave: Initiating the Cycle

ATRIAL_DEPOLARISATION

- ❶ Represents the electrical excitation of the atria.
- This electrical signal directly leads to the mechanical contraction of both atria simultaneously.

QRS Complex: The Main Pump

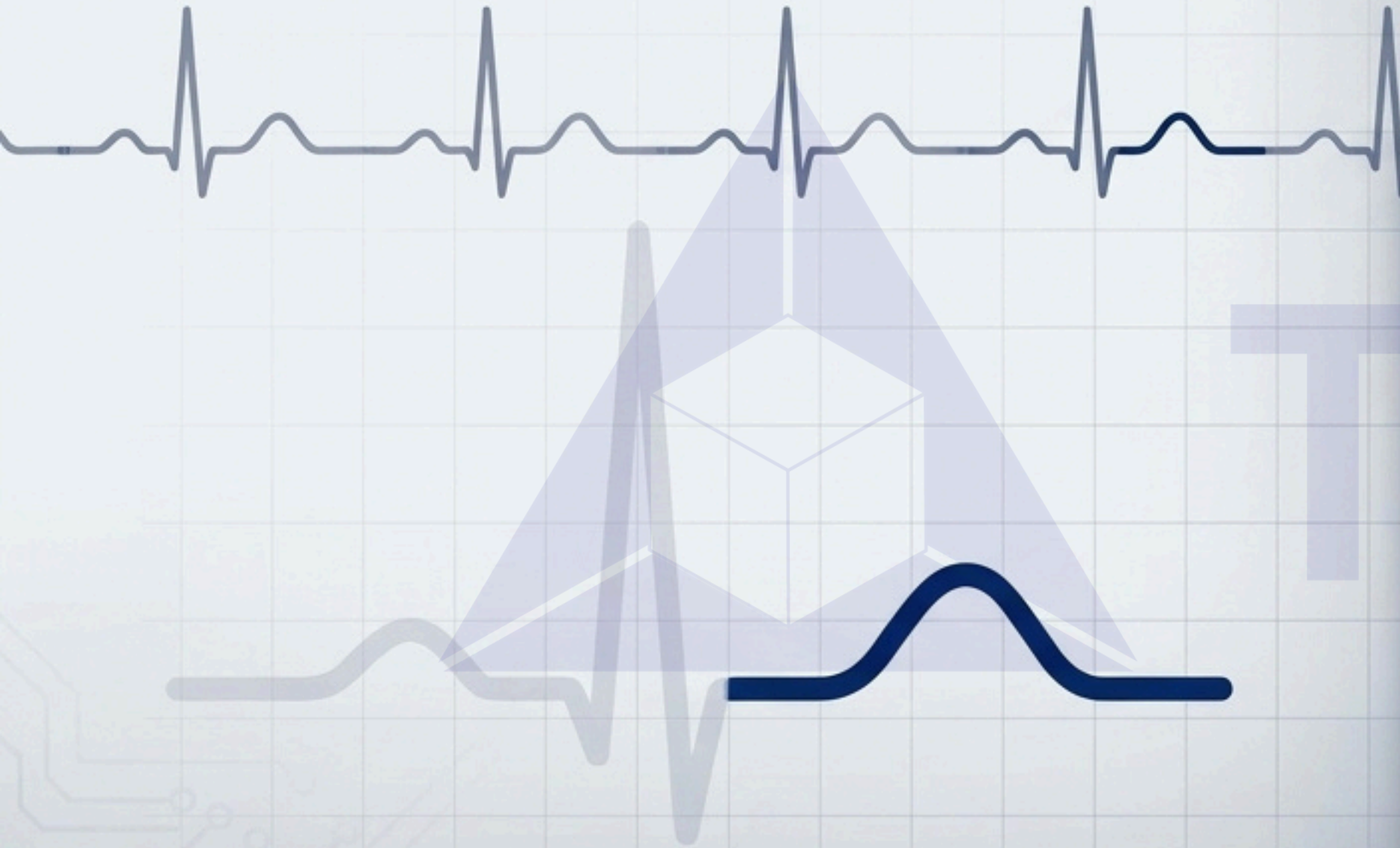
VENTRICULAR_DEPOLARISATION

- Represents the powerful electrical excitation of the ventricles.
- Initiates ventricular contraction. The contraction starts shortly after 'Q', marking the definitive beginning of systole.



By counting the number of QRS complexes that occur in a given time period, clinicians can accurately determine an individual's heart beat rate.

T-Wave: The Reset

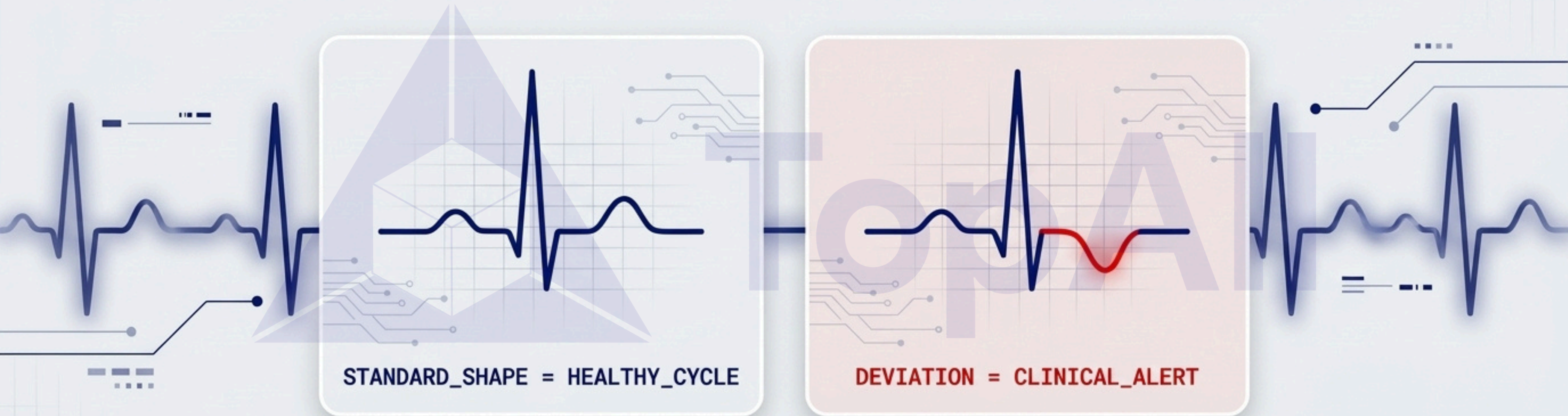


VENTRICULAR_REPOLARISATION

- Represents the return of the ventricles from an excited, active state back to a normal, resting state.
- The precise end of the T-wave marks the absolute end of ventricular systole. The heart is now prepared for the next cycle.

The Diagnostic Power of the Shape

For a given lead configuration, ECGs obtained from different, healthy individuals maintain roughly the exact same shape.



Any deviation from the standard shape indicates a possible physiological abnormality or cardiac disease, granting the ECG immense clinical significance.

Summary



An ECG is the definitive map of the heart's electrical narrative. It translates invisible electrical signals (depolarisation and repolarisation) into a visible graph, allowing us to perfectly track the mechanical pumping action (systole and diastole) of the atria and ventricles.



You've Learned the Theory.

Now Let's Test It.

Reading notes gets you knowledge.

Practicing MCQs gets you marks.

That's exactly what TopAll Pro is built for.

Try TopAll Pro Now

What TopAll Pro Does Differently

-  **Stuck? Snap it. Solve it. — Doubts AI**
Photo → step-by-step solution in seconds, 24/7
-  **Your AI Coach finds your blind spots**
Concept-level weakness detection — not just chapter-level
-  **4.5 Lakh+ questions. Never run out.**
13× more content than any other prep app in India
-  **Build your own test in 60 seconds**
Pick a chapter, set difficulty — AI does the rest instantly.
-  **AI Recommendation that helps you improve**
AI Recommendation Analysis your Tests and tell you where you need to improve.



Practice the moment you finish studying
Jump in while the concept is still fresh in your head

4.5L+
MCQs

1.5L+
Students

AI Powered
In-Depth Analysis