

DownloadsArrhythmia caseSearchCriteriaBasicsTreatment

The Ultimate Online Tool for Learning ECG Interpretation

Immersive Interactive

Personalized Education On-Demand

ECG Teach & Test

Save the Patient!
Pass the Boards!

Resource of choice for healthcare professionals worldwide

GET STARTED

? Learn ECGs in 5 minutes a day!

Throwing a bunch of descriptors on the slide for discussion (pick what you like for now)

Compare & contrastPop quizzesDon't be fooledSave (note/flashcard)ProceduresTake test

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What would you like to do?

I'm looking for something specific
Take me there

Start from scratch (I'm new to ECGs)

Assess my level (identify areas of weakness & best place to start)

Start an arrhythmia case (I'm ready)

In-a-nutshell summary (looking a quick review)

In-depth review (become an expert)

Compare any two arrhythmias (don't be fooled)

Treatment (most current recommendations; what I need to know and do)

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Summaries
Cheat sheets
etc

You're in charge!
Make the diagnosis & treat the patient

Immersive Interactive

Choose any 2 arrhythmias for side-by-side comparison. Great tool

Many types of quizzes. Reinforce your learning. See how well you do

Common mistakes. Don't be fooled!

Save important info as a note or flashcard to your digital vault for review

10 modules: waves, complexes, approach to interpretation

Choose among 30 arrhythmias. Everything you need to know

Broader scope of learning & testing

How-To nursing care for ECG placement, cardioversion, pacemakers

Take sample exams. Retest your saved questions

Around the Horn - Aerial View -

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At-a-Glance Graphics

Quick Reviews

Cheat Sheets

Memory Tips

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Atrial Fibrillation



Atrial fibrillation (AFib) is a **chaotic atrial rhythm** represented by **fibrillatory (f) waves** producing a random oscillating baseline on the ECG and an **irregular ventricular rhythm** represented by irregularly spaced QRS complexes

r = fibrillatory waves
QRS = ventricular contraction



Acute Complications include:

- **Stroke**: AFib causes the atria to quiver/fibrillate rather than contract, causing blood to pool in the atria. This increases the risk of **blood clots**, which can **dislodge and travel to the brain**. AFib increases the risk of **stroke** 5-fold!
- Others are related to a combination of rapid heart rate and reduced cardiac output and include palpitations, dizziness, shortness of breath, chest pain, hypotension, weakness, heart failure, and myocardial ischemia/infarction.

Treatment is focused on:

- **Preventing blood clots & stroke** via anticoagulant drugs. Monitor for changes in neurological status and bleeding.
- **Improving symptoms** by controlling heart rate and rhythm using drugs and/or electrical cardioversion.
- **Treating co-existent medical conditions**: infection, heart failure, COPD/asthma, hyperthyroidism, pain, other intercurrent illness.
- **Reducing risk of recurrence** via modification of lifestyle factors: obesity, alcohol & smoking, stress, identification of obstructive sleep apnea.

Compare & contrast

Pop quizzes

Don't be fooled

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Procedures

Take test

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You are at the nurses' station when the telemetry alarm goes off on one of your patients. He is a 55-year-old smoker admitted to the hospital for COPD. The doctor is handling an emergency on another floor. The task of interpreting the ECG rhythm strip and initiating treatment is in your hands.



Case 1. 55 year old smoker complaining of shortness of breath



Compare & contrast

Pop quizzes

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Save (note/flashcard)

Procedures

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Treatment

Everything you need to know!

Choose a Topic

Arrhythmias	Conduction disturbances	Basic ECG
<ul style="list-style-type: none">• Artifact• Aystole• Atrial fibrillation• Atrial flutter• Atrial tachycardia• Complete heart block• Electromechanical dissociation (EMD)• Multifocal atrial tachycardia (MAT)• Premature atrial contraction (PAC)	<ul style="list-style-type: none">• AV block, first-degree• AV block, second-degree (type one, Wenkebach)• AV block, third-degree (complete heart block)• Left bundle branch block• Right bundle branch block	<ul style="list-style-type: none">• Approach to interpretation• P-QRS-T measurements• Heart rate
<ul style="list-style-type: none">• Premature ventricular contraction (PVC)• Sinus arrhythmia• Sinus bradycardia• Sinus pauses• Sinus tachycardia• Supraventricular tachycardia (SVT)• Ventricular fibrillation (VF)• Ventricular tachycardia (VT), nonsustained• Ventricular tachycardia, sustained	<ul style="list-style-type: none">• ECG lead placement/ troubleshooting• Cardioversion/defibrillation• Pacemakers	<ul style="list-style-type: none">• Clinical• Myocardial ischemia/infarction• Clinical disorders• Drugs

Compare & contrast

Pop quizzes

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Procedures

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Quick or In-depth. You choose.

Atrial Fibrillation



Make your selection

- Quick Summary
- In-Depth Review
 - Description
 - ECG recognition
 - ECG criteria
 - Don't be fooled
 - Quizzes
 - Treatment
 - **Cycle through all topics**

Compare & contrast

Pop quizzes

Don't be fooled

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Procedures

Take test

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Pulled from Information Packets

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Become an expert!

ECG Criteria

Click on the arrhythmia to see which criteria are needed to establish the diagnosis



- Artifact
- Asystole
- **Atrial fibrillation**
- Atrial flutter
- Atrial tachycardia
- Complete heart block
- Electromechanical dissociation
- Multifocal atrial tachycardia
- Normal sinus rhythm
- Premature atrial contraction
- Premature ventricular contraction
- Sinus arrhythmia
- Sinus bradycardia
- Supraventricular tachycardia
- Ventricular fibrillation
- Ventricular tachycardia, non-sustained
- Ventricular tachycardia, sustained
- AV block, first-degree
- AV block, second-degree (type one, Wenckebach)
- AV block, third-degree (complete heart block)
- Left bundle branch block (LBBB)
- Right bundle branch block (RBBB)

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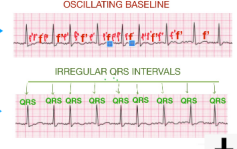
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Atrial Fibrillation

Note: heart icons link to figure

Two criteria must be present

- 1. No P waves.** Rapid chaotic baseline. Atrial activity is totally irregular and represented by fibrillatory (f') waves of varying amplitude, duration and morphology, causing random oscillations of the baseline.
- 2. Irregular ventricular rhythm.** Ventricular rate (interval between QRS complexes) is usually 100 to 180 BPM and **irregular** in the absence of drugs.



OSCILLATING BASELINE

IRREGULAR QRS INTERVALS

BACK QUIZ ME SAVE

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The Basics

Choose your module

- Cardiac anatomy & physiology
- Purpose of ECG How ECG works
- Overall approach to ECG interpretation
- ECG lead placement
- Heart rate
- Waves & complexes (P-QRS-T)
- Rhythm recognition
- Myocardial ischemia & infarction
- Pacemakers
- Cardioversion & defibrillation

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P WAVE: THE BASICS

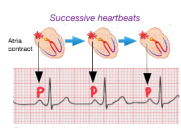
How it's identified

- Small deflection closest to and immediately preceding the QRS complex (larger spike)

What it Represents

- Electrical activity generated during **atrial contraction**

Successive heartbeats

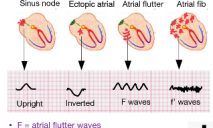


P = electrical activity caused by atrial contraction

What it Helps Determine

- Morphology of P wave helps identify the origin of the atrial impulse

Origin of atrial rhythm and P wave morphology



Upright Inverted F-waves F' waves

- F = atrial flutter waves
- F' = atrial fibrillatory waves

BACK QUIZ ME SAVE

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Treatment

Click on an arrhythmia or conduction disturbance

- Asystole
- **Atrial fibrillation**
- Atrial flutter
- Atrial tachycardia
- Complete heart block
- Electromechanical dissociation (EMD)
- Multifocal atrial tachycardia (MAT)
- Premature atrial contraction (PAC)
- Premature ventricular contraction (PVC)
- Sinus arrhythmia
- Sinus bradycardia
- Sinus pauses
- Sinus tachycardia
- Supraventricular tachycardia (SVT)
- Ventricular fibrillation (VF), nonsustained
- Ventricular tachycardia, sustained
- AV block, first-degree
- AV block, second-degree (type one, Wenckebach)
- AV block, third-degree (complete heart block)

Compare & contrast

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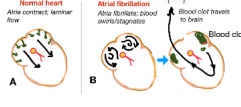
Criteria

Basics

Treatment

Atrial Clot Formation & Embolization

Risk for stroke increased 5-fold!



Normal heart
Atria contract: normal flow

Atrial fibrillation
Atria fibrillate: blood swirls/stagnates

Blood clot travels to brain

In atrial fibrillation, atrial blood swirls and stagnates, increasing the risk for blood clots that can dislodge and embolize to the brain and lungs, causing stroke and pulmonary embolism (PE).

Treatment of Atrial Fibrillation

focuses on:

- **Preventing blood clots** from forming in the atria, which can lead to stroke, by using anticoagulant drugs. Monitor for changes in neurological status and bleeding.
- **Improving symptoms** by controlling heart rate and rhythm using drugs and/or electrical cardioversion ([more](#)).
- **Treating co-existent medical conditions:** infection, heart failure, COPD/asthma, hyperthyroidism, pain, other intercurrent illness.
- **Reducing risk of recurrence** via modification of lifestyle factors: obesity, alcohol & smoking, stress, identification of obstructive sleep apnea

Compare & contrast

Pop quizzes

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Compare & Contrast

Step 1. Choose any two

- Asystole
- **Atrial fibrillation**
- Atrial flutter
- Atrial tachycardia
- Complete heart block
- Electromechanical dissociation (EMD)
- Multifocal atrial tachycardia (MAT)
- Premature atrial contraction (PAC)
- Premature ventricular contraction (PVC)
- Sinus arrhythmia
- Sinus bradycardia
- Sinus pauses
- Sinus tachycardia
- Supraventricular tachycardia (SVT)
- Ventricular fibrillation (VF)
- Ventricular tachycardia (VT), nonsustained
- Ventricular tachycardia, sustained
- AV block, first-degree
- AV block, second-degree (type one, Wenckebach)
- AV block, third-degree (complete heart block)
- Left bundle branch block
- Right bundle branch block

Step 2. Choose one of the following

☐ Quick summary
☐ In-depth comparison

Step 3. Click "Compare"

COMPARE

Compare & contrast

Pop quizzes

Don't be fooled

Save (note/flashcard)

Procedures

Take test

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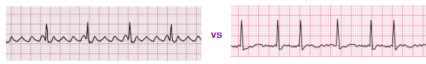
Search

Criteria

Basics

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Atrial Flutter vs. Atrial Fibrillation



What feature would you like to compare?

→

- Description
- What's going on inside the heart
- How this translates to the ECG
- **Quizzes**
- Cycle through all features

COMPARE

Compare & contrast

Pop quizzes

Don't be fooled

Save (note/flashcard)

Procedures

Take test

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Pop Quizzes

(Choose one)

- Artifact
- Asystole
- **Atrial fibrillation**
- Atrial flutter
- Atrial tachycardia
- Complete heart block
- Electromechanical dissociation
- Multifocal atrial tachycardia
- Normal sinus rhythm
- Premature atrial contraction
- Premature ventricular contraction
- Sinus arrhythmia
- Sinus bradycardia
- Sinus tachycardia
- Supraventricular tachycardia
- Ventricular fibrillation
- Ventricular tachycardia, nonsustained
- Ventricular tachycardia, sustained
- AV block, first-degree
- AV block, second-degree (type one, Wenckebach)
- AV block, third-degree (complete heart block)

Surprise me!

Compare & contrast Pop quizzes Don't be fooled Save (note/flashcard) Procedures Take test


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QUIZ Atrial Fibrillation: Find The Imposter

Instructions: Click on the ECG strip that does not show atrial fibrillation



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Don't Be Fooled!

(Choose one)

☒ Arrhythmias

☐ Conduction disturbances

☐ Waves, complexes, intervals, segments (P-QRS-T)

☐ Treatment mistakes

Compare & contrast Pop quizzes **Don't be fooled** Save (note/flashcard) Procedures Take test

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Don't Be Fooled!

At first glance, the ECG strip appears to show fibrillatory (f) waves producing random oscillations of the baseline, suggesting AFib.

However, if you look carefully, P waves are evident (arrows), which excludes AFib. The ECG also shows QRS complexes at a regular rate, another finding generally inconsistent with AFib.

Oscillations in the baseline mimicking AFib can be caused by tremor (the cause here), loose ECG leads, and electrical interference.

Be sure to confirm the absence of P waves before diagnosing atrial fibrillation.

Compare & contrast Pop quizzes **Don't be fooled** Save (note/flashcard) Procedures Take test

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For example, learner answers quiz question incorrectly. Wants to review/reinforce at later time

Save As Note or Flashcard

Save any tip, feature, or quiz question as a note or flashcard.

Atrial fibrillation
Atrial activity (does/does not) originate in the heart's normal pacemaker (SA node)

→

ATRIAL FIBRILLATION
Atrial activity (does/does not) originate in the heart's normal pacemaker (SA node)

Reveal answer

Create a Personal Digital Vault by saving notes and flashcards to view or print at a later time

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Procedures

(Choose one)

ECG

Cardioversion
Defibrillation

Pacemakers

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Take Test

(Choose one)

Heart rate

Waves Complexes Intervals (P-QRS-T)

Potpourri Go for it!

Rhythm recognition

Ischemia & infarction

ECG technique

Pacemakers

Retest Incorrect responses

Cardioversion & defibrillation

Treatment

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