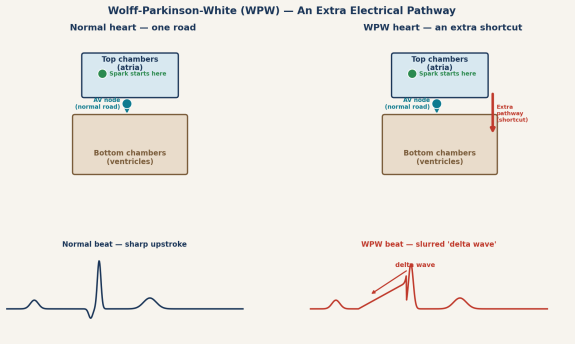
Understanding Wolff-Parkinson-White (WPW) Syndrome

An extra electrical pathway that can cause fast heartbeats — and is often cured for good

You were born with one extra wire in your heart. A short procedure can fix it.



Online: https://go.riasalimd.com/wpw-guide

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Last Updated: August 2026

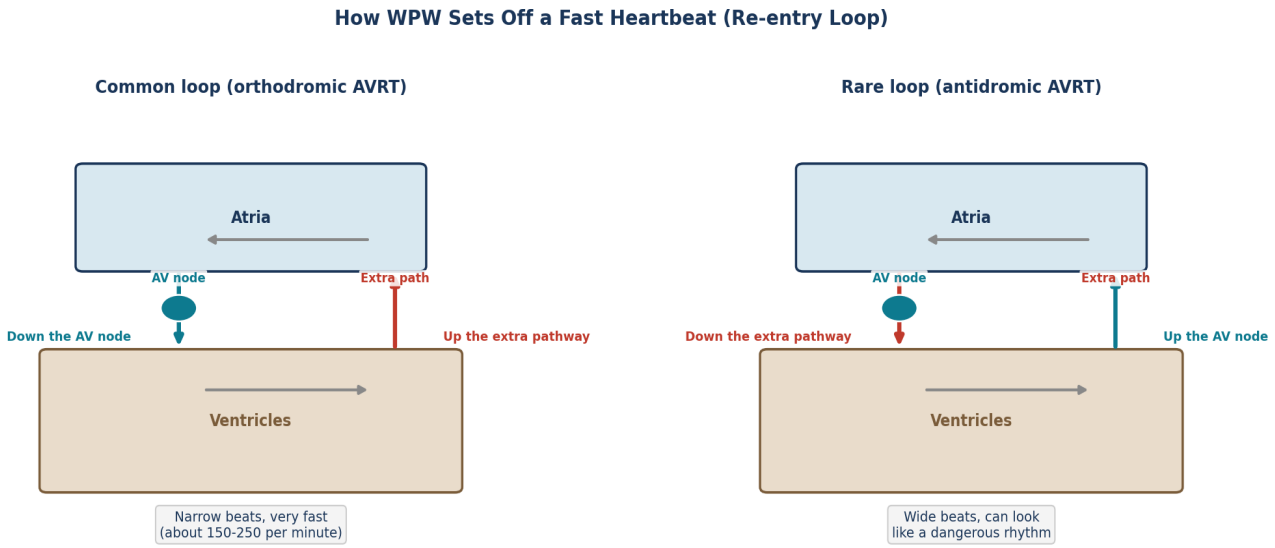
Names & Terms You Will Hear

Term	Meaning
Wolff-Parkinson-White (WPW) syndrome	You have the extra pathway AND it causes fast heartbeats or symptoms. 'Syndrome' means there are symptoms.
WPW pattern (pre-excitation)	The extra pathway shows up on your EKG, but you have never had symptoms. This is a 'pattern,' not yet a 'syndrome.'
Accessory pathway (bypass tract)	The extra electrical wire you were born with. It connects the top and bottom chambers and skips the normal control point.
Delta wave	The tell-tale sign on the EKG. The early beat makes a slow, slurred slope at the start of each heartbeat.
AVRT (atrioventricular re-entrant tachycardia)	The fast heartbeat WPW causes. The signal runs in a loop between the normal road and the extra pathway.
SVT (supraventricular tachycardia)	The broad family of fast heartbeats that start above the ventricles. AVRT is one type. See our SVT guide.
Pre-excited atrial fibrillation	Atrial fibrillation in a person with WPW. The chaotic signal can race down the extra pathway. This is the dangerous combination.
Catheter ablation	The procedure that finds and removes the extra pathway with heat or cold energy. It is often a one-time cure.

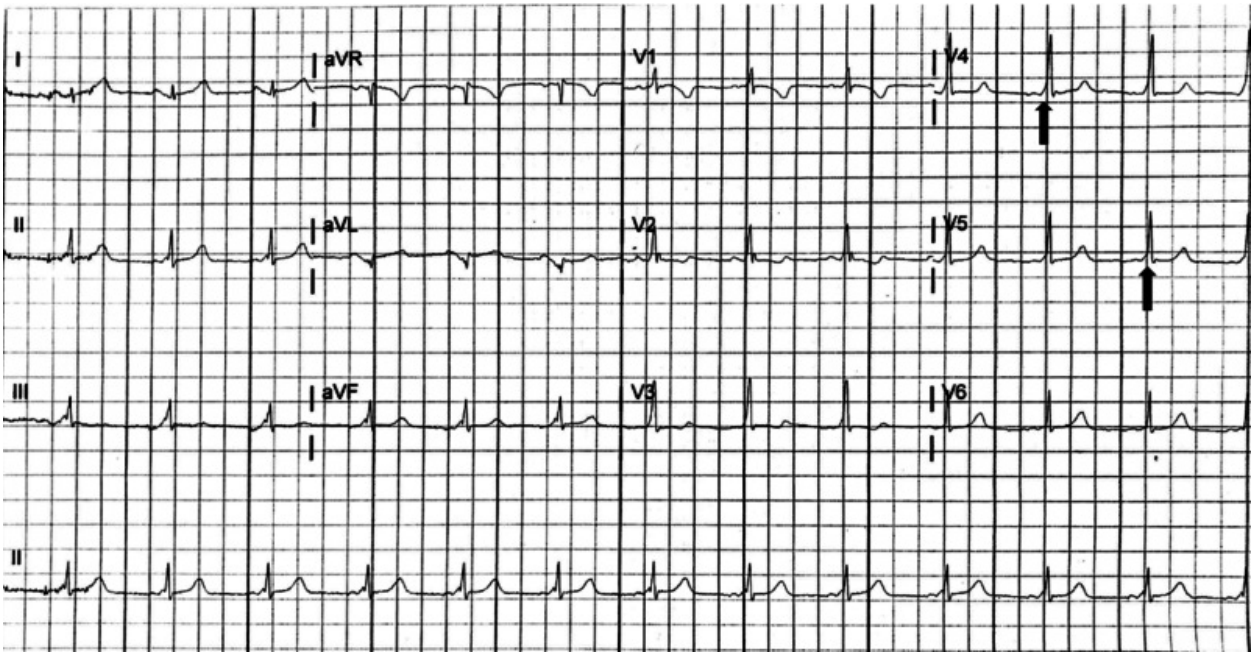
If someone collapses and is not breathing normally: Call 911. Start CPR. Use an AED.
Push hard and fast in the center of the chest, about 100 to 120 pushes a minute — the beat of the song 'Stayin' Alive.' An AED (automated external defibrillator) checks the heart and will not shock a normal rhythm, so it is safe to use. The free PulsePoint app finds the nearest AED.

What Is Wolff-Parkinson-White (WPW) Syndrome?

- Your heart has one normal road for its electrical signal: the AV node. It acts like a speed bump that keeps the bottom chambers from going too fast.
- In WPW, you were born with an extra pathway — a second wire that skips the speed bump. The signal can take a shortcut and reach the ventricles too early. This early firing is called 'pre-excitation.'
- On the EKG, the shortcut shows up as a short PR interval and a slurred upstroke called a delta wave.
- The extra pathway is not a blockage and not caused by anything you did. It is a wiring variant you have had since birth.
- About 1 to 3 of every 1,000 people have the WPW pattern. Many never have a single symptom. Others get sudden episodes of a racing heart that can start and stop in an instant.
- When the extra pathway causes symptoms, the diagnosis becomes WPW syndrome. The good news: a catheter ablation can often remove the pathway for good.



How WPW sets off a fast heartbeat. The common loop (left) runs down the normal road and back up the extra pathway, making narrow, very fast beats. The rare loop (right) goes the other way and makes wide beats.



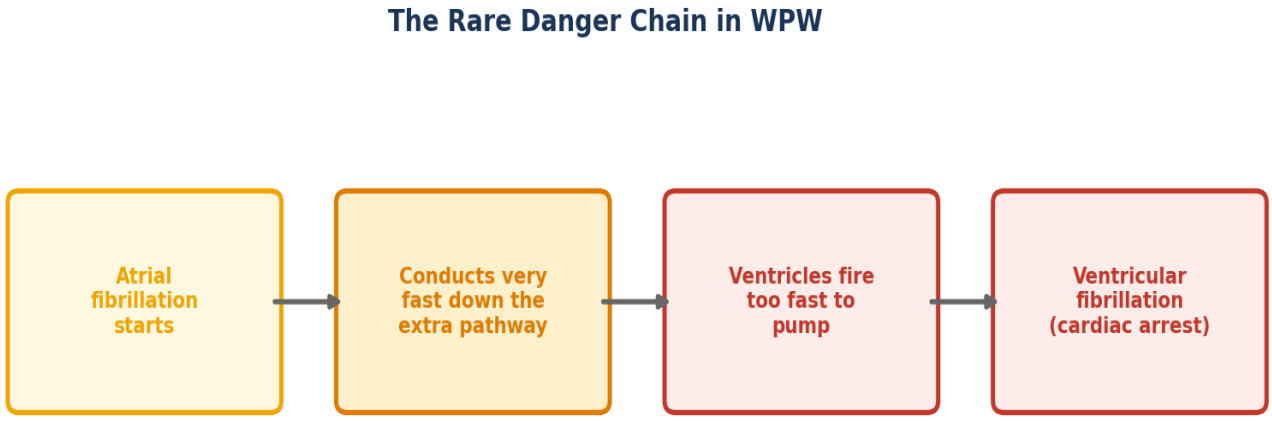
A real 12-lead EKG showing the WPW pattern: a short PR interval and a slurred upstroke on the QRS, the delta wave (black arrows). This is the same short-circuit sign your own EKG would show. Image: Larson et al., Cureus 2020 (CC BY 4.0).

Where You Fit — Three WPW Situations

Pattern, no symptoms	Syndrome (has symptoms)	High-risk pathway
• Delta wave on EKG only	• Episodes of racing heart	• Pathway conducts very fast
• Never had an episode	• AVRT is the usual rhythm	• Pre-excited AFib is risky
• Most people do fine	• Ablation is preferred	• Higher sudden-death risk
• May test if young or athlete	• Often a one-time cure	• Ablation strongly advised

Why It Matters

- Most of the time, WPW causes a fast but not life-threatening heartbeat (AVRT). It can feel frightening — a sudden pounding at 150 to 250 beats per minute — but it is usually not dangerous on its own.
- The real concern is a rare combination: atrial fibrillation plus a 'fast' extra pathway. The chaotic atrial signal can race down the pathway and push the ventricles so fast they cannot pump. This can turn into ventricular fibrillation — a cardiac arrest.
- This is why some common heart-rhythm drugs are dangerous in WPW with atrial fibrillation. They block the normal road and force even more signal down the extra pathway. The table later in this guide lists the drugs to avoid.
- The sudden-death risk is small. For people with the pattern but no symptoms, it is roughly 1 in 1,000 per year. The risk is higher in young people, athletes, and those whose pathway conducts very fast.
- Because the risk can be measured and the pathway can be removed, WPW is one of the few heart conditions we can often cure completely.



The rare danger chain. Atrial fibrillation can race down a fast extra pathway and overwhelm the ventricles. Ablation removes the pathway and removes this danger.

Heart-Rhythm Drugs to Avoid in WPW With Atrial Fibrillation

Drug or group	Why it can be harmful	Safer in this setting
Adenosine	Blocks the normal road and can speed conduction down the extra pathway.	Ask your team; not used when the rhythm is pre-excited AFib.
Calcium channel blockers (verapamil, diltiazem)	Slow the normal road, forcing more signal down the extra pathway.	Avoid in pre-excited AFib.
Beta-blockers	Block the normal road; can let the pathway run even faster.	Avoid in pre-excited AFib.
Digoxin	Can shorten the pathway's recovery time and speed the ventricles.	Avoid in WPW.
Preferred emergency options	Drugs that calm the extra pathway, or an electrical shock if unstable.	Procainamide or ibutilide; cardioversion if unstable.

Why 'No Symptoms' Still Sometimes Needs Testing

- Most people with the pattern and no symptoms never have a problem. The yearly sudden-death risk is roughly 1 in 1,000.
- But a small number first learn they have WPW from a serious event. The risk is concentrated in those whose pathway conducts very fast.
- An EP study can measure the pathway. A short recovery time (the shortest pre-excited beat-to-beat interval at 250 milliseconds or less) marks a higher-risk pathway.
- Testing is most often offered to younger patients, competitive athletes, and people in high-risk jobs such as pilots and commercial drivers.
- If testing shows a low-risk, slow pathway, watchful waiting is reasonable. If it shows a fast pathway, ablation lowers future risk.

Carry a WPW alert. Keep a card or phone note that says you have Wolff-Parkinson-White syndrome. In an emergency it tells the team which rhythm drugs to avoid — a detail that can change the safe treatment.

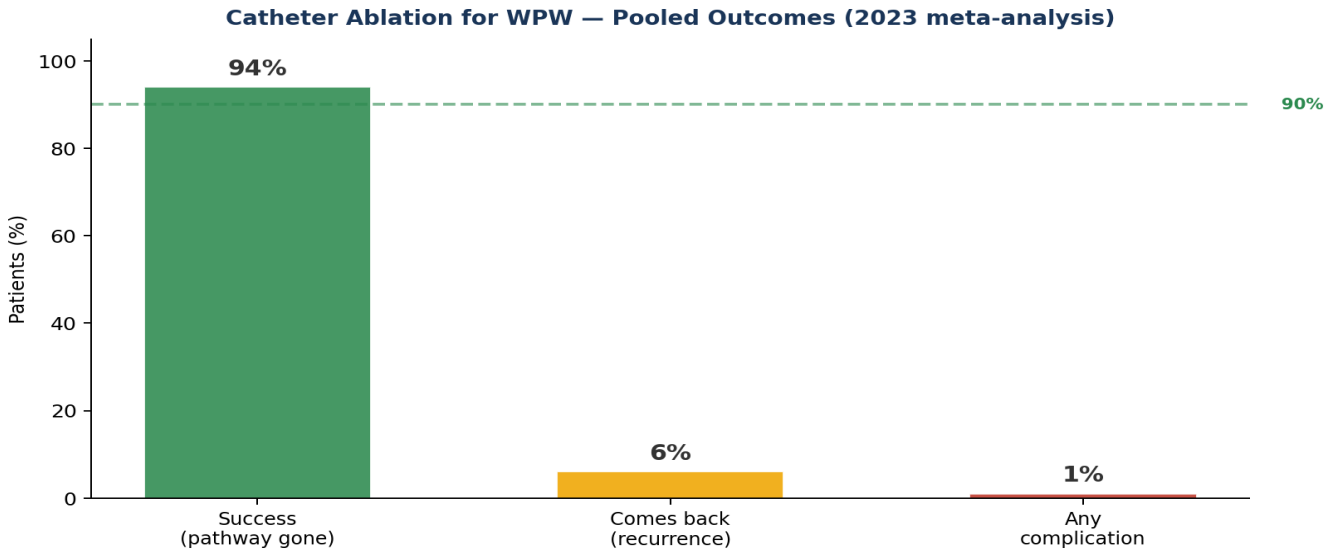
Risk Factors

Some patients are more likely to develop this condition. Knowing your risk helps your care team take extra precautions.

Risk Factor	Why It Increases Risk
Born with it (congenital)	WPW is a wiring variant present from birth. You cannot prevent it. It is found, not caused.
Young age (under 30)	Younger patients more often have a fast-conducting pathway, which carries more risk. Risk tends to fall with age.
Male sex	Men are somewhat more likely to have WPW and to have a higher-risk pathway.
Family history	A small share of WPW runs in families. Rare inherited forms can occur with a thickened heart muscle.
Certain heart conditions present at birth	Ebstein anomaly of the tricuspid valve and some other congenital heart defects are linked with extra pathways.
High-risk job or sport	Athletes, pilots, and commercial drivers may need testing even without symptoms, because an episode at the wrong moment matters more.

Treatment Options

- Catheter ablation is the main treatment and is often a cure. A thin tube is threaded to the heart, the extra pathway is mapped, and it is sealed off with heat (radiofrequency) or cold (cryoablation).
- Ablation works in about 94 out of 100 patients. The pathway comes back in about 6 out of 100, who may need a second touch-up. Serious complications happen in about 1 out of 100.
- For symptomatic WPW, ablation is the strongly preferred choice in national guidelines (a Class I recommendation). It removes both the fast heartbeats and the small sudden-death risk in one step.
- If you choose not to have ablation, some daily medicines can lower how often episodes happen. But they do not remove the pathway and are less effective than ablation.
- During an actual episode of fast heartbeat, vagal moves (bearing down, a cold-water face dip) may stop it. If a doctor treats it, the safe drug choices differ from ordinary SVT — your team will choose carefully.
- If you have the pattern with no symptoms, you may still be offered an electrical study (EP study) to measure the pathway. If it conducts fast, ablation lowers future risk — this was shown in the Pappone trial.
- See our EP study and ablation guide and our SVT guide to learn what the procedure day looks like.



Catheter ablation outcomes pooled from a 2023 meta-analysis. Success is about 94 percent, recurrence about 6 percent, and any complication about 1 percent.

What the EP Study and Ablation Day Looks Like

- You arrive fasting, with light sedation or anesthesia. Thin tubes (catheters) go in through a vein in the groin. There are no large cuts.
- First we map the heart's electrical signals to find exactly where the extra pathway is. We can also measure how fast it conducts — the key safety number.
- Once located, the pathway is sealed with heat (radiofrequency) or cold (cryoablation). You may feel a brief warmth or pressure; the sedation keeps you comfortable.
- The whole procedure usually takes 2 to 4 hours. Most people rest a few hours afterward and go home the same day or the next morning.
- Success is about 94 in 100. If the pathway returns (about 6 in 100), a short repeat procedure usually finishes the job.
- See our EP study and ablation guide for a full walk-through of the day.

Comfort Measures at Home (No Medication Needed)

These simple steps support healing and ease symptoms. Use them alongside any medication your doctor prescribes.

- Learn vagal moves with your care team: bear down as if having a bowel movement, or dip your face in cold water. These can stop an AVRT episode quickly.
- Stay well hydrated and limit heavy caffeine and energy drinks, which can trigger episodes in some people.
- Cut back on alcohol. Binge drinking can set off atrial fibrillation, the dangerous partner of WPW.
- Get enough sleep and manage stress. Fatigue and adrenaline surges make episodes more likely.
- Carry a simple card or phone note that says you have WPW. It tells emergency teams which drugs to avoid.
- Tell your team about your job and sports. Pilots, drivers, and competitive athletes may need clearance before returning.

Risks, Benefits, and Alternatives

Every choice has trade-offs. Use this table to start the shared decision conversation.

Option	Risks	Benefits	Alternatives
Catheter ablation (radiofrequency or cryo)	Serious complication in about 1 in 100: bleeding, vessel injury, rarely the normal road is harmed and needs a pacemaker (lowest near septal pathways).	Often a one-time cure. Success about 94 in 100. Removes both the fast heartbeats and the rare sudden-death risk. No lifelong pills.	Daily rhythm medicine. Watchful waiting if truly no symptoms and a low-risk pathway.
EP study with risk testing first	Small risks of an invasive test. May still lead to ablation in the same sitting.	Measures how fast the pathway conducts. A fast pathway means more risk and favors ablation. A slow one is reassuring.	Non-invasive clues (exercise test, monitor). Less precise than an EP study.
Daily rhythm medicine (no ablation)	Side effects, daily pills, does not remove the pathway. Some drugs are unsafe if you also get atrial fibrillation.	Can lower how often episodes happen. An option if you decline ablation or while you wait.	Ablation (more effective). Vagal moves alone for rare, mild episodes.
Watchful waiting (pattern, no symptoms, low risk)	A first event could still happen, though it is uncommon. Needs reliable follow-up.	Avoids any procedure. Reasonable when testing shows a slow, low-risk pathway.	EP study to confirm low risk. Ablation for peace of mind or a high-risk job.

Common Misconceptions

Myth	Reality
WPW means I will have a heart attack.	WPW is an electrical wiring issue, not a blocked artery. A heart attack is caused by a blocked artery. They are completely different problems.
A fast heartbeat from WPW will kill me.	Most WPW episodes are fast but not dangerous. They feel scary but usually stop on their own or with simple moves. The rare danger is a different rhythm — atrial fibrillation racing down the pathway.
If I have no symptoms, there is nothing to worry about.	Most people with the pattern do fine. But a small number first learn they have WPW from a serious event. That is why testing is offered to younger people, athletes, and high-risk jobs.
Any heart-racing medicine is safe for me.	Not true. Several common drugs that slow the normal road can be dangerous in WPW with atrial fibrillation. They push more signal down the extra pathway. Always tell every provider you have WPW.
Ablation is risky open-heart surgery.	Ablation is not open-heart surgery. It is done through a thin tube in a vein, usually with light sedation. Most people go home the same day or the next morning.
Once treated, WPW always comes back.	A successful ablation removes the pathway for good in most people. The pathway returns in about 6 out of 100, and a short repeat procedure usually fixes it.
WPW is something I caused.	You did not cause it. It is a wiring variant you were born with. Nothing in your diet or lifestyle created the extra pathway.

Possible Complications

Knowing what can go wrong helps you spot problems early. Most complications are uncommon, especially with treatment.

Where / What	What Can Happen
Fast heartbeat episodes (AVRT)	The most common problem. The signal loops between the normal road and the extra pathway, causing sudden racing at 150 to 250 beats per minute. Usually stops on its own or with vagal moves.
Pre-excited atrial fibrillation	The dangerous combination. Chaotic atrial signals race down the extra pathway. The heart can beat dangerously fast. This is the rhythm that can lead to cardiac arrest.
Ventricular fibrillation and cardiac arrest	Rare. Pre-excited atrial fibrillation can decay into a chaotic ventricular rhythm. The heart stops pumping. This is why WPW carries a small sudden-death risk and why ablation matters.
Fainting (syncope)	A very fast rhythm can drop blood pressure enough to cause a blackout. Fainting with a racing heart is a warning sign that needs prompt evaluation.
Anxiety and avoidance	Frequent unpredictable episodes can cause real worry and lead people to avoid activity. A cure with ablation often resolves this.
Procedure-related effects	Ablation itself can rarely injure a blood vessel or the normal AV node. Injury to the AV node near septal pathways may require a pacemaker, but this is uncommon.

Points to Know

If you remember nothing else, remember these key points.

- WPW is an extra electrical pathway you were born with. It is not a blocked artery and not a heart attack.
- The delta wave on your EKG is the signature. A short PR interval goes with it.
- Most episodes are fast but not dangerous. The rare danger is atrial fibrillation racing down the pathway.
- Several common rhythm drugs are unsafe in WPW with atrial fibrillation. Tell every provider you have WPW.
- Catheter ablation is often a cure — about 94 in 100 succeed, with about a 1 in 100 serious complication rate.
- For symptomatic WPW, ablation is the strongly preferred treatment in national guidelines.
- No symptoms does not always mean no risk. Younger people, athletes, and high-risk jobs may need an EP study.
- A racing heart that starts and stops suddenly is worth reporting — it may be a treatable AVRT.

When to Call Us - and When to Call 911

If you are not sure, call. We would rather hear from you twice than miss a real problem.

- Sudden fast, pounding heartbeat that does not stop in a few minutes — call us; if you also feel faint, call 911.
- Fainting or near-fainting with a racing heart — call 911. This can be a sign of a dangerous rhythm.
- Chest pain or pressure with a fast heartbeat — call 911.
- Severe shortness of breath during an episode — call 911.
- A racing heart that feels different, faster, or more irregular than your usual episodes — call us today.
- Repeated episodes of a sudden racing heart, even if they stop on their own — call us this week to discuss ablation.
- If someone with WPW collapses and is not breathing normally — Call 911. Start CPR. Use an AED.

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Trusted Resources

The links below are the trusted resources Dr. Ali used to write this guide and that he recommends you visit for more information. Each is a clickable link in the digital version and a Short.io tracked URL on the printed version.

- Cleveland Clinic — Wolff-Parkinson-White (WPW) Syndrome - Patient-friendly overview of the extra pathway, symptoms, and ablation.
- Mayo Clinic — Wolff-Parkinson-White (WPW) Syndrome - Symptoms, the delta wave, diagnosis, and treatment options in plain language.
- American Heart Association — Supraventricular Tachycardia (SVT) - Background on the fast heartbeats that WPW can cause.
- American Heart Association — Hands-Only CPR - How to do bystander CPR — push hard and fast in the center of the chest.
- PulsePoint Respond (app) - Free app that alerts you to nearby cardiac arrests and finds the closest AED.

Sources Used to Build This Guide

Every recommendation in this guide is grounded in one or more of the studies, guidelines, or trusted resources below. Short links are tracked so Dr. Ali can see which references patients are reading; nothing personally identifying is captured.

- Cleveland Clinic — Wolff-Parkinson-White (WPW) Syndrome *[Clinical]*
  Plain-language patient overview of the extra electrical pathway, symptoms, and ablation cure.
- 2015 ACC/AHA/HRS Guideline for the Management of Adult Patients With Supraventricular Tachycardia *[Guideline]*
  Class I ablation recommendation for symptomatic WPW, the list of AV-nodal-blocking drugs that are harmful in pre-excited AFib, and risk-stratification framing.
- Mayo Clinic — Wolff-Parkinson-White (WPW) Syndrome *[Clinical]*
  Patient overview of symptoms, the delta wave on the EKG, and treatment options.
- WPW Pattern in the Asymptomatic Individual (Circulation: Arrhythmia & Electrophysiology) *[Clinical Trial]*
  Basis for the asymptomatic-pattern sudden-death risk (about 0.1% per year) and the role of EP-study risk stratification.
- Pappone et al. — Randomized Study of Prophylactic Catheter Ablation in Asymptomatic WPW (NEJM 2003) *[Clinical Trial]*
  Pivotal randomized trial showing prophylactic ablation reduces arrhythmic events in higher-risk asymptomatic patients; named in the treatment and RBA discussion.
- Success Rate of Radiofrequency Catheter Ablation in WPW — Systematic Review and Meta-Analysis (2023) *[Clinical Trial]*
  Source for the ablation success rate (about 94%), recurrence (about 6%), and complication rate (about 1%) cited in the guide.
- Risk Assessment in Patients With Symptomatic and Asymptomatic Pre-excitation (EP Europace, 2024) *[Guideline]*
  Current European risk-stratification review; basis for the high-risk pathway markers (shortest pre-excited RR interval and pathway refractory period of 250 ms or less).
- American College of Cardiology — Asymptomatic Ventricular Pre-excitation: When to Be Concerned (2022) *[Clinical]*
  ACC framing of which asymptomatic patients warrant EP-study evaluation (young age, athletes, high-risk occupations).

About This Guide

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Version: 2026-08-15

Reviewer note: Reviewed: Cleveland Clinic, Mayo Clinic, American Heart Association, and American College of Cardiology patient pages. This guide adds a re-entry-loop diagram, an ablation-outcomes chart, the rare AFib-to-VF danger chain, a drugs-to-avoid table, per-scenario deep dives, and an RBA section built on the Pappone trial and the 2023 ablation meta-analysis.

Disclaimer

This guide is for educational purposes only and does not replace medical advice from your physician. Recommendations may not apply to every patient. Always follow the specific instructions of Dr. Ali and your care team. In an emergency call 911 or go to the nearest emergency department.

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