



UNDERSTANDING WOLFF-PARKINSON-WHITE (WPW) SYNDROME

An Extra Pathway That Can Cause Rapid Heart Rhythms

WHAT IS WPW?

Wolff-Parkinson-White (WPW) Syndrome is a heart rhythm disorder caused by an extra electrical connection (accessory pathway) between the atria (upper chambers) and the ventricles (lower chambers).

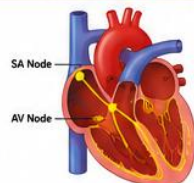
This pathway allows impulses to bypass the AV node, leading to early activation of the ventricles (pre-excitation) and predisposing to episodes of rapid heart rhythms (SVT). It is present from birth.

HOW COMMON IS WPW?

- Occurs in approximately 1-3 per 1,000 people
- Can affect infants, children, adolescents, and adults
- Many individuals remain completely asymptomatic
- Often discovered incidentally during a routine ECG

NORMAL vs. WPW CONDUCTION

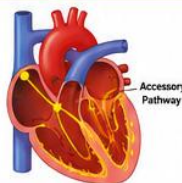
NORMAL CONDUCTION



Electrical impulse:
SA Node → AV Node → Ventricles

Impulse travels only through the normal AV node.

WPW CONDUCTION

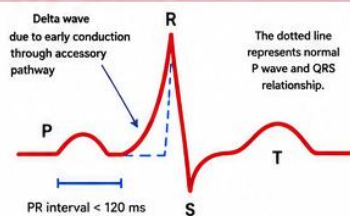


Electrical impulse:
SA Node → AV Node and Accessory Pathway → Ventricles

Impulse can bypass the AV node through the accessory pathway causing early activation (pre-excitation) of the ventricles.

THE WPW PATTERN ON ECG

The WPW pattern can be identified on an ECG, even when the patient is in a normal rhythm.



- Short PR interval (<120 ms)
- Delta wave (slurred upstroke of the QRS)
- Wide QRS complex
- Secondary ST-T wave changes

If most impulses go through the AV node, the WPW pattern may disappear. The ECG can vary from day to day or hour to hour depending on stress, adrenaline, or caffeine. These patients have an **intermittent WPW pattern**.

SYMPTOMS

Many patients have no symptoms. When symptoms occur, they may include:

- Palpitations or rapid heartbeat
- Chest discomfort
- Dizziness or lightheadedness
- Shortness of breath
- Fatigue or exercise intolerance
- Near-fainting or fainting (syncope)

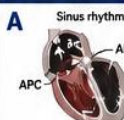
INFANTS MAY PRESENT WITH:

- Poor feeding
- Irritability
- Fast breathing
- Pale appearance
- Signs of heart failure if tachycardia is prolonged



TYPES OF ARRHYTHMIAS IN WPW

Electrophysiological Mechanisms and ECG Manifestations of WPW-Related Arrhythmias



A Sinus rhythm
Fusion of antegrade conduction over AP and AV node



B Orthodromic tachycardia (Most common)
Antegrade - AV node
Retrograde - AP
Narrow QRS complex



C Antidromic tachycardia
Antegrade - AP
Retrograde - AV node
Wide QRS complex



D Atrial fibrillation
Fusion of antegrade conduction over AP and AV node
Varying QRS morphology

WHY DO WE WORRY?

There is a small but significant risk of more severe arrhythmias, such as pre-excited atrial fibrillation, leading to ventricular fibrillation and sudden death. Luckily, the risk remains quite low, about 1-4% over a lifetime.

Seek emergency care if:

- Palpitations that persist or worsen
- Chest pain
- Difficulty breathing
- Severe dizziness
- Fainting
- Infant becomes lethargic, pale, or feeds poorly

HOW IS WPW DIAGNOSED?

PRIMARY TEST: ELECTROCARDIOGRAM (ECG)

- Diagnosis of WPW syndrome requires:
- Evidence of ventricular pre-excitation (short PR interval and delta wave)
 - AND a documented or clinically suspected related tachyarrhythmia.

ADDITIONAL TESTS MAY INCLUDE:



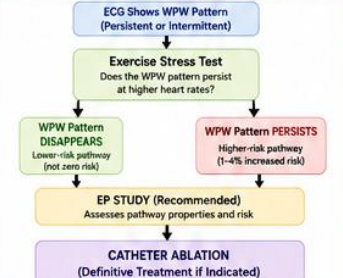
UPDATED GUIDELINES FOR ASYMPTOMATIC PATIENTS WITH WPW

- Asymptomatic patients with WPW are at risk of sudden death.
- The lack of palpitations isn't entirely reassuring.
- Intermittent (WPW) preexcitation patients are likely at lower risk but not near-zero risk, and should undergo an EP study.
- The Noninvasive Stress Test will likely detect only 10% of people with a lower risk pathway (e.g., if you have WPW at 60 bpm and it disappears at 80 bpm). Although the patient is probably at very low risk, it's still difficult to say there are absolutely ZERO risks.
- It is recommended that all patients over age 8 with WPW undergo an EP study.

According to the latest recommendations from the American Heart Association (AHA), any asymptomatic WPW patients with a persistent WPW pattern on a stress test should undergo an electrophysiology study or catheter ablation due to a 1-4% increased risk of life-threatening tachyarrhythmias.

Based on these recommendations, referral for an EP consult is advised. The family agreed with the plan, and the referral will be arranged.

RISK STRATIFICATION PATHWAY



MANAGEMENT OPTIONS

1 CONSERVATIVE OBSERVATION

- Education and monitoring
- Self-administered vagal maneuvers for any recurrent SVT episodes



2 MEDICATIONS

- Medications can reduce episodes but do not eliminate the pathway.
- Examples: Beta-blockers, Flecainide, Other antiarrhythmics



3 CATHETER ABLATION (DEFINITIVE)

- Success rate: 90-95% or higher
- Minimally invasive procedure
- Potential cure with excellent long-term outcomes



TIPS TO HELP PREVENT & MANAGE EPISODES

- Increase your daily fluid intake (e.g., water or electrolyte drinks).
- DO NOT PANIC. Stay calm and practice deep breathing relaxation techniques. Visit www.dawnbuse.com for resources.
- Perform vagal maneuvers as demonstrated (blow into your thumb and/or bear down).
- Increase aerobic exercise.
- Reduce stress: adequate sleep, exercise, mindfulness, relaxation, and stress-management techniques.

Avoid triggers:

- Caffeinated beverages
- Energy drinks
- Stimulant medications (unless approved by your doctor)
- Triptan-type migraine medications
- Over-the-counter cold meds with decongestants (pseudoephedrine, phenylephrine, etc.)
- Use allergy medications without decongestants (avoid products with "D").

KEY TAKE-HOME MESSAGES

- WPW is caused by an extra electrical pathway in the heart.
- ECG typically shows a short PR interval and a delta wave.
- Some patients have intermittent WPW, where the ECG pattern comes and goes.
- WPW syndrome requires both ECG evidence of pre-excitation and a related tachyarrhythmia.
- Although the risk is low, serious arrhythmias can occur.
- EP studies help identify patients at higher risk.
- Catheter ablation is highly effective and often curative.
- Most patients can expect a normal and healthy life with appropriate evaluation and treatment.

SPORTS PARTICIPATION

Athletes with WPW should undergo specialized evaluation.

- Exercise stress testing is recommended
- EP study may be advised
- Catheter ablation is often recommended before competitive sports
- Most athletes can return to full participation after successful treatment



LONG-TERM OUTLOOK

- The prognosis for WPW is excellent.
- Most children live normal, active lives.
- Sports participation is often possible.
- Catheter ablation is frequently curative.
- Quality of life is excellent.
- Long-term complications are uncommon.



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