

# Ventricular Septal Defect (VSD) – Pediatrics

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## 1. Introduction

Acute Rheumatic Fever (ARF) is an autoimmune inflammatory disease that occurs as a sequela of untreated or inadequately treated group A beta-hemolytic streptococcal (GABHS) pharyngitis. It primarily affects the heart, joints, skin, and central nervous system. Commonly affects children aged 5–15 years, especially in low- and middle-income countries. It is the leading cause of acquired heart disease in children worldwide.

## 2. Etiology and Pathogenesis

Caused by Group A Streptococcus (*Streptococcus pyogenes*). Pathogenesis involves molecular mimicry, where antibodies against GAS M-protein cross-react with human tissues, leading to immune-mediated inflammation in the heart, joints, skin, and CNS.

## 3. Clinical Features

Major manifestations (Jones Criteria): Carditis, Polyarthritis, Chorea, Erythema Marginatum, Subcutaneous Nodules. Minor: Fever, Arthralgia, raised ESR/CRP, prolonged PR interval.

## 4. Diagnosis

Based on Jones Criteria: Evidence of recent GAS infection + (2 major) or (1 major + 2 minor) criteria. Supporting evidence includes throat culture, RADT, elevated ASO titers, and echocardiography.

## 5. Management

Acute phase: Penicillin or erythromycin (if allergic), Aspirin for arthritis, Corticosteroids for severe carditis, supportive heart failure management, haloperidol or valproic acid for chorea. Secondary prophylaxis: Long-term benzathine penicillin G to prevent recurrence.

## 6. Complications

Rheumatic heart disease (RHD) with chronic valvular damage, heart failure, recurrent ARF.

## 7. Prevention

Primary: Early antibiotic treatment of GAS pharyngitis. Secondary: Long-term prophylaxis for patients with prior ARF. Public health: Improve access to healthcare and education on sore throat management.

## 8. Prognosis

Early diagnosis and adherence to prophylaxis reduce recurrence risk and RHD development.

### Exam Pearls

- Always mention types of VSD when answering exam questions.
- Murmur location & character is key in diagnosis.
- Spontaneous closure common in small muscular VSDs.
- Early surgical closure prevents irreversible pulmonary hypertension.