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Rheumatic Fever & Kawasaki Disease

1. Overview

- **Acute rheumatic fever (ARF)** and **Kawasaki disease (KD)** are systemic **inflammatory** diseases.
- Both conditions are treated with **aspirin** to ↓inflammation and **prevent** life-threatening **cardiac complications** (see **TABLE 1**).
  - Aspirin is normally **avoided** in children due to risk for **Reye syndrome**.

TABLE 1: RHEUMATIC FEVER & KAWASAKI DISEASE

Condition	Acute Rheumatic Fever	Kawasaki Disease
Cause	• Inadequately treated **strep pharyngitis**	• Unknown, but may be triggered by infection
Treatment	• Antibiotics • Aspirin	• IV immuno-globulin (IVIG) • Aspirin
Major Complications	• **Rheumatic heart disease** • **Heart failure (HF)**	• Coronary artery **aneurysm** • **Myocardial infarction (MI)** • **HF**

2. Acute Rheumatic Fever (ARF)

ARF = an **inflammatory autoimmune** disease occurring 2-6 weeks **after** an inadequately treated **streptococcal infection** (strep pharyngitis [strep throat], scarlet fever).

- **Untreated ARF** can cause permanent heart valve damage, known as **rheumatic heart disease (RHD)**.

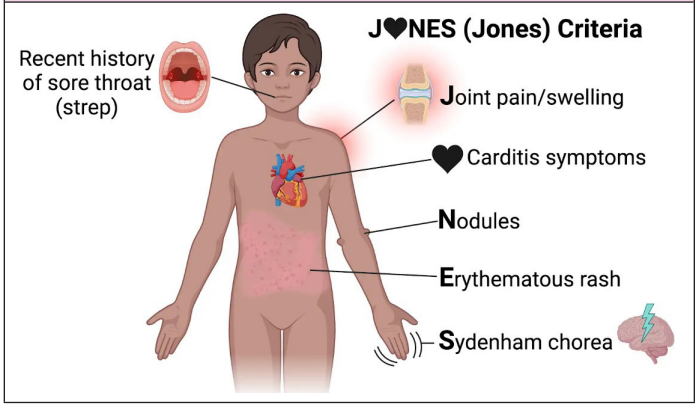
Pathophysiology

Antibodies form against group A strep bacteria and attack **connective tissues**, causing **inflammation** in the **brain**, **skin**, **joints**, and **heart** (especially the **mitral valve**).

Assessment findings

- Evidence of **recent strep pharyngitis infection** (recent **sore throat**, ↑ strep antibody titers)
- **J♥NES criteria** are major signs of connective tissue **inflammation** (see **FIGURE 1**)
  - **J**: **J**oint **pain** and swelling
  - **♥**: **C**arditis symptoms like **tachycardia** and **new murmur**
  - **N**: **N**odules over bony surfaces (elbows, knees)
  - **E**: **E**rythematous **rash** on the trunk and limbs (erythema marginatum)
  - **S**: **S**ydenham **chorea** (involuntary movements of face and extremities)
- **Fever**, ↑ inflammatory markers (**ESR**, **CRP**)

FIGURE 1: ACUTE RHEUMATIC FEVER FINDINGS



NCLEX Star Points

❶ **Rheumatic fever findings**: Clients with ARF often have a recent **history of sore throat** from **strep** pharyngitis and "**J♥NES**" criteria: **J**oint pain, **C**arditis symptoms (tachycardia, new murmur), **N**odules, **E**rythematous rash, and **S**ydenham chorea. The major complication of ARF is **rheumatic heart disease** (heart valve damage).

2. Acute Rheumatic Fever (ARF), Continued

Interventions:

Nursing care for **ARF** focuses on:

1. Administering **antibiotics** and **aspirin**
2. Providing supportive care for **carditis**, **arthritis**, and **chorea**

1. Administer **antibiotics** and **aspirin**:
   - Administer **antibiotics** for **prevention**.
     - ✪ **#1 strategy to prevent ARF** = timely treatment of **strep pharyngitis** with a **full course** of antibiotics.
   - Administer **antibiotics** for ARF **treatment** and continue as long-term **prophylaxis**.
     - Inform caregivers about the importance of long-term monthly IM penicillin to **prevent recurrence** of strep and ARF infections, which further ↑ risk for RHD.
     - ✪ When **valve repair or replacement** is required, administer **prophylactic antibiotics before** invasive procedures like **dental work** to ↓ risk for infective endocarditis.
   - Administer **aspirin** as prescribed to ↓ **systemic inflammation** and relieve **joint pain**.
     - ✪ **Do not** administer aspirin **before** ARF diagnosis is confirmed, as it can **mask new joint pain** (arthralgias).

2. Provide supportive care for **carditis**, **arthritis**, and **chorea**:
   - **Carditis**:
     - ✪ Implement **bedrest** initially to ↓ cardiac workload.
       - Progress to **quiet** activities (movies, puzzles) as symptoms resolve.
     - Prepare for **echocardiogram** to assess severity of carditis and valve damage.
     - ✪ Monitor for signs of **HF**, such as tachycardia and dyspnea (carditis ↑ HF risk).
       - Treat HF with **fluid restriction**, **diuretics**, and **oxygen** as needed.
       - See **CONGENITAL HEART DEFECTS CHEAT SHEET** for HF interventions.
   - **Arthritis**:
     - Provide **massage** and alternating **hot and cold compresses**.
   - **Chorea**:
     - Chorea causes sudden, uncontrolled movements, resulting in **emotional distress** and ↑ risk for **injury**.
     - Implement **fall precautions** and **safety measures** (remove sharp objects from meal trays).
     - ✪ Provide **emotional support** and reassure child and caregivers that chorea is **temporary**.

3. Kawasaki Disease (KD)

KD = an acute, self-limiting **vasculitis** (vessel inflammation) of the small and medium-sized blood vessels like the coronary arteries.

- Cause is **unknown** but may be triggered by infection.
- More common in **males** and **Asian** children
- ✪ Can cause life-threatening **aneurysm of the coronary artery**

Pathophysiology

Widespread **inflammation** of small and medium-sized **blood vessels** causes:

- Superficial **swelling** and **redness** of the skin, eyes, and mouth
- Weakening and scarring of vascular walls → ↑ risk for **coronary artery aneurysm** + **MI**

Assessment findings

Progresses over several weeks in **phases**: Acute → Subacute → Convalescent

- ✪ **Acute** phase **"I CRASH + Burn"** (**FIGURE 2**):
  - **I**: **I**rritability (**I**nconsolable crying)
  - **C**: **C**onjunctivitis
  - **R**: **R**ash
  - **A**: **A**denopathy (cervical lymph node swelling)
  - **S**: **S**trawberry tongue (inflamed tongue and oral mucosa)
  - **H**: **H**and and foot swelling and erythema
  - ✪ **BURN**: **Fever** lasting **≥5 days** (unresponsive to antibiotics and antipyretics)

NCLEX Star Points

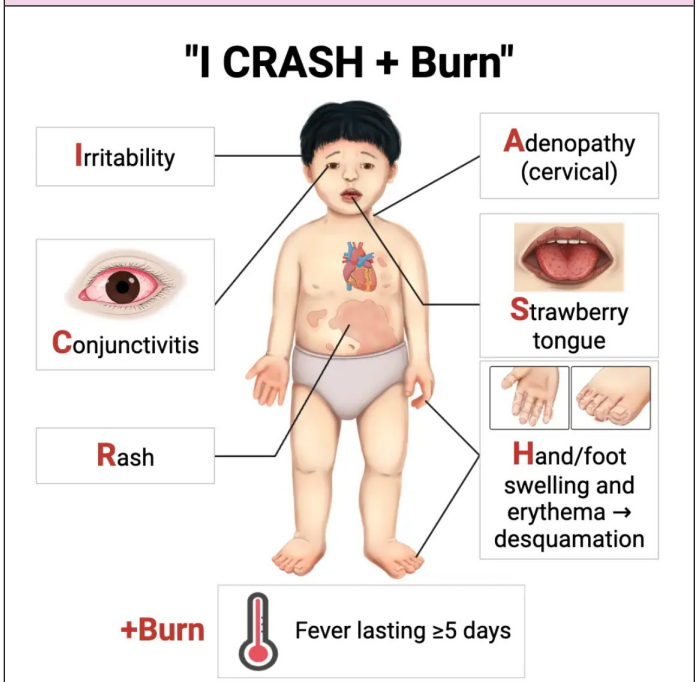
❷ **Rheumatic fever prevention**: The most effective strategy to **prevent** acute rheumatic fever is timely treatment of **strep pharyngitis** with a **full course** of antibiotics.

❸ **Kawasaki findings**: The acute phase of Kawasaki disease causes "**I CRASH + Burn**" findings (**I**rritability, **C**onjunctivitis, **R**ash, **A**denopathy, **S**trawberry tongue, **H**and and foot swelling **+ BURN** = **fever** lasting ≥5 days).

3. Kawasaki Disease (KD), Continued

- **Subacute** phase
  - Fever resolves.
  - **Cracked**, **peeling skin** of the lips, hands, and feet (desquamation)
  - **Thrombocytosis** (↑ risk for MI)
- **Convalescent** phase
  - Symptoms resolve, but ↑ inflammatory markers persist.
- ↑ **inflammatory** markers (ESR, CRP, WBC) through all phases

FIGURE 2. KAWASAKI DISEASE FINDINGS



Interventions

Nursing care for KD focuses on:

1. Administering **IVIG** and **aspirin**
2. Monitoring for **coronary aneurysm**
3. Providing **caregiver support**

1. Administer **IVIG** and **aspirin**:
   - Administer **IVIG** within the **first 10 days** of illness to ↓ fever and prevent cardiac complications (MI).
     - IVIG ↓ immune response → ↓ inflammation.
     - IVIG requires the same administration guidelines as **blood products** (IVIG = **blood product**).
       - Monitor vital signs frequently.
       - Monitor for adverse reactions (flushing, chills).
     - Administer **aspirin**:
       - During the **acute phase**, give **high-dose** aspirin for anti-inflammatory and antipyretic effects.
       - During the **subacute and convalescent phases**, give **low-dose** aspirin to prevent clot formation from coronary aneurysms and thrombocytosis.
2. Monitor for **coronary artery aneurysm**:
   - KD vasculitis can cause coronary artery aneurysms → ↑ **risk for MI** and **HF**.
   - Prepare for serial **echocardiograms** during and after treatment to detect coronary aneurysms.
   - Monitor for signs of **HF** like dyspnea, tachycardia, sudden weight gain, and a gallop rhythm (extra heartbeat).
     - Obtain **I&O** and **daily weights**.
   - Monitor for **signs of MI**, which may be subtle in younger children (**restlessness**, **abdominal pain**, **vomiting**, **pallor**).
3. Provide **caregiver support**:
   - Inform caregivers that **irritability**, **risk for MI**, and other symptoms may persist for several **weeks to months**.
   - Emphasize importance of **follow-up care**:
     - Repeat **echocardiograms** are required every few weeks.
     - **Delay live vaccines (MMR, varicella)** for **11 months** after IVIG therapy (IVIG is an immunosuppressant).
     - Inform caregivers that **long-term aspirin therapy** is needed for clients with residual coronary artery abnormalities.

NCLEX Star Points

④ **Kawasaki treatment**: Kawasaki disease is treated with **IVIG** and **aspirin** to prevent **coronary aneurysm**. **Delay live vaccines** (MMR, varicella) for **11 months after** IVIG therapy because IVIG suppresses the immune response.

⑤ **Coronary aneurysm**: Children with Kawasaki disease are at increased risk for **coronary aneurysm**. Teach caregivers the importance of follow-up **echocardiograms** and monitoring for subtle **signs of MI**, such as **restlessness**, **abdominal pain**, **vomiting**, and **pallor**.

3. Kawasaki Disease (KD), Continued

- Provide **symptom management**:
  - Apply **cool cloths** and **lotion** to alleviate skin discomfort.
  - Put lubricating **ointment** on cracked **lips**.
  - Encourage **cool**, nonacidic **fluids** and **soft**, **bland foods** for oral inflammation.
  - Perform **passive ROM** exercises for arthritis.
  - Provide a **quiet environment** (talk gently, play soft music) to ↓ irritability.
  - Encourage caregivers to **express feelings** and **take breaks** to relieve stress.
- **Notify HCP** of:
  - Recurrence of **fever**
  - Signs of **aspirin toxicity** (tinnitus, GI upset)
  - Signs of **Reye syndrome** (vomiting, lethargy)

NCLEX Top 5 Targets

❶ **Rheumatic fever findings**: Clients with acute rheumatic fever often have a recent **history of** _____. What are the "**J♥NES**" **assessment findings**?

❷ **Rheumatic fever prevention**: What is the most effective strategy to **prevent** acute rheumatic fever?

❸ **Kawasaki symptoms**: The acute phase of Kawasaki disease causes **"I CRASH + Burn"** symptoms: **I**_____, **C**_____, **R**_____, **A**_____, **S**_____, **H**and and foot _____, **+ BURN** or _____ lasting ≥5 days and unresponsive to _____ and _____.

❹ **Kawasaki treatment**: What two **medications** are given to treat Kawasaki disease? What type of **vaccinations** should be **delayed** after Kawasaki treatment?

❺ **Coronary aneurysm**: Children require repeated _____ for several months after resolution of Kawasaki disease. Teach caregivers to recognize subtle signs of **MI**, such as _____, _____ **pain**, _____, and _____.

Answers: 1. sore throat; J: Joint pain and swelling, ♥: Carditis symptoms (tachycardia and new murmur), N: Nodules, E: Erythematous rash, S: Sydenham chorea 2. Timely treatment of strep pharyngitis with a full course of antibiotics 3. Irritability, Conjunctivitis, Rash, Adenopathy, Strawberry tongue, swelling, fever, antibiotics, antipyretics 4.IVIG and high-dose aspirin; Live vaccines (MMR, varicella) 5. echocardiograms; restlessness, abdominal pain, vomiting, pallor

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