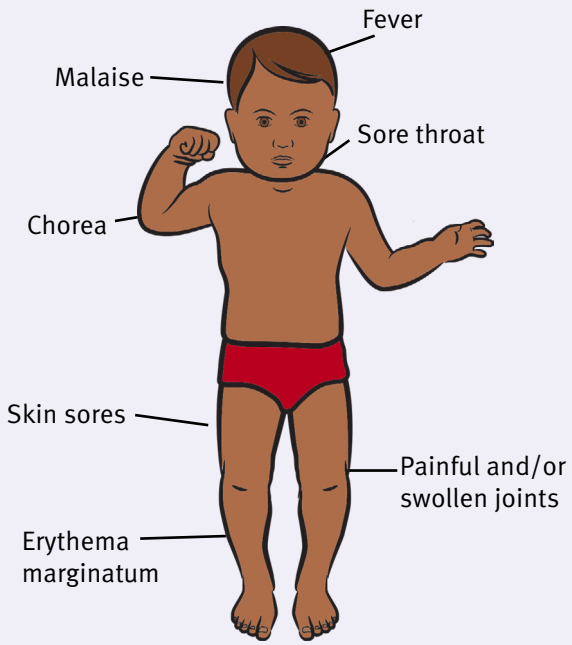
Queensland Paediatric Emergency Care

Skill Sheets

Acute Rheumatic Fever (ARF)

Acute rheumatic fever (ARF) is caused by infection with the Group A *streptococcal* (GAS) of the throat or the skin. It is essential that episodes of ARF are adequately managed to prevent progression to Rheumatic Heart Disease (RHD). Children will often present to an emergency department (ED) with ARF, however investigating for ARF is easily missed. This skill sheet aims to increase emergency clinicians understanding of ARF and how it should be managed within the ED context. ARF should be considered in any child who presents with fever or joint pains with a sore throat or skin sores. Any child who is suspected of having ARF should be commenced on the Suspected Acute Rheumatic Fever Pathway.

Clinical signs and symptoms



It is unlikely that all the clinical signs and symptoms will be present at the same time. The sore throat and skin sores are usually first, followed by arthritis and/or arthralgia, the chorea. Skin nodules can be seen throughout the disease process.

High Risk Groups

- Aboriginal and Torres Strait Islander, Pacific Islander, Maori
- Rural or remote living or overcrowded housing in metropoliton areas
- Low socioeconomic status
- Migrants and refugee groups
- Previous diagnosis of ARF or RHD (please confirm via RHD register - ArfRhdRegister@health.qld.gov.au OR 1300 135 854 (Monday to Friday during business hours)

ALERT

Children who exhibit any of the above signs of symptoms who are from high risk groups must be commenced on the Suspected Acute Rheumatic Fever Pathway.

Mandatory Investigations

The following investigations are mandatory components of an ARF work-up. Please refer to your local health service as to which investigations occur in ED and which can be completed as an inpatient. It is essential that these investigations are compeleted. Arrangements should be made for outpatient investigations prior to the child being discharged home.

- Electrocardiogram (ECG)
- White blood cells (WBC), erythrocyte sedimentation rate (ESR), c-reactive protein (CRP)
- Antistreptolysin titre (ASOT)
- Anti DNAse B titres
- Blood cultures (if febrile)
- Throat swab M/C/S - Group A *Streptococcal* (GAS)
- Wound swab (as applicable)
- Chest x-ray
- Echocardiogram to be expedited to the referral hospital.

How is a diagnosis made?

Major Criteria (JONES)	Minor Criteria
J: Aseptic mono-arthritis, polyarthralgia or polyarthritis O: Carditis N: Subcutaneous nodules E: Erythema Marginatum S: Syndenham Chorea	• Mono-arthralgia • Fever • ESR ›30mm/hr or CRP ›30mg/L • Prolonged PR on ECG 3-12 years ›0.16 sec 12-16 years ›0.18 sec

ARF is suspected where there is evidence of a preceding GAS AND a minimum of two major criteria OR one major and two minor criteria OR three minor criteria with known ARF/RHD.

ARF is still a likely diagnosis but does not meet criteria by either one major or minor manifestation OR no evidence of a preceding GAS.

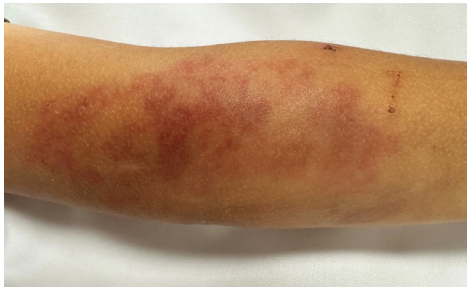
In both of the above scenarios, the child should be commenced on the treatment pathway for ARF.

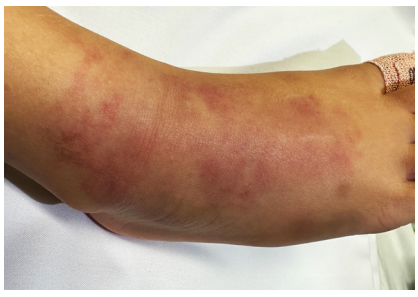
Additional Resources for Detection of Major and Minor Criteria:

Videos of Sydenham Chorea by RHD Australia

- Whole Body
- Spooning

An example of Erythema Marginatum on a child's arm and foot





Treatment

- Ideally all patients with suspected ARF should be admitted for initial management and education. Referral pathways will vary with each facility.
- A repeat ECG should be conducted. An echocardiogram should be organised with the referral centre. Analgesia to manage symptoms should also be prescribed.
- If the child presents clinically unwell or with severe symptoms, transfer to a teritary facility should be highly considered. Discuss the patient with the referral team that is approriate in your HHS.
- Refer to the RHD Australia Guideline for further information on treatment regimes, including initial treatment of GAS. There is also an app available for download.

ALERT

ARF & RHD are notifiable diseases. Notifications can be made using the following links:

ARF notification form

RHD notification form

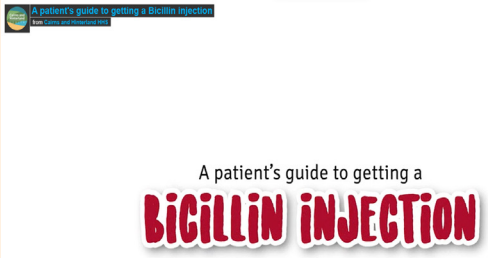
Bicillin Injection

- Children diagnosed with ARF will require penicillin intramuscularly monthy for many years. It is important to start each child's journey sensitively.
- Communicate with the patient and their family about each step. Ensure that information is being presented in a way in which the patient and family can understand. Allow questions to be asked.
- If the patient is able to be admitted, discuss with the admitting team the suitability of giving the first antibiotic injection on the ward.
- Offer both pharmcological and non-pharmacological methods of making the patient's first needle as comfortable as possible. Examples include the use of nitrous oxide, the Buzzy Bee or cool pack therapy at the site.
- Where possible, allow the child to have some autonomy. For example, they may be able to choose the site of the needle or whether they will lie down or stand up.

Video

This is a video made by the team caring for children with ARF and RHD in Cairns and Hinterland HHS. It features a young boy telling of his experience of getting his regular injections.

You may like to consider using this to help educate children with ARF and their families about the importance of having their regular penicillin injections.



Follow-up

The most important aspect of the care of the child with ARF is ensuring they have follow-up care arranged. The diagnosis of ARF is the beginning of a long-term relationship with the health service, therefore it is essential that children and their families are postively connected from the beginning of their journey. Here are some key points to remember:

- Ensure that a notification has been made ARF/RHD register.
- Ensure that any investigations that are not possible at the presenting site are arranged with the appropriate referral site.
- Ensure that the patient and their family have recieved the appropriate and relevant education about what to expect into the future.
- Ensure that the patient and their family have a contact point to come back to if they have any questions or concerns. This person might be an Indigenous Liason Officer.

For further information:

Suspected Acute Rheumatic Fever Clinical Pathway

ARF RHD Guideline

References:

Cairns and Hinterland HHS. A Patient's Guide to Getting a Bicillin Injection. Accessed May 19, 2022 from https://vimeo.com/548628780/6eb8148cd8

DermNZ. (2016). Rheumatic fever. Accessed May 19, 2022 from https://dermnetnz.org/topics/rheumatic-fever

RHD Australia. (2022). ARF RHD Guideline. Accessed May 19, 2022 from https://www.rhdaustralia.org.au/arf-rhd-guideline

RHD Australia. (2022). Guidelines and Diagnosis Calculator App. Accessed May 19, 2022 from https://www.rhdaustralia.org.au/apps - RHD app

RHD Australia. (2020). Sydenham chorea – spooning. Accessed May 19, 2022 from https://www.rhdaustralia.org.au/resources/sydenham-chorea-spooning

RHD Australia. (2020). Sydenham chorea - whole body. Accessed May 19, 2022 from https://www.rhdaustralia.org.au/resources/sydenham-chorea-whole-body

Queensland Health. (2020). Suspected Acute Rheumatic Fever Clinical Pathway. Accessed May 19, 2022 from https://qheps.health.qld.gov.au/__data/assets/pdf_file/0037/2754199/ARF-Clinical-Pathway.pdf

This Queensland Paediatric Emergency Skill Sheet was developed and revised by the Emergency Care of Children (ECC) working group, with active participation and consultation from key Rheumatic Heart Disease stakeholders in Queensland. Initial ECC work was funded by the Queensland Emergency Department Strategic Advisory Panel (QEDSAP).

Skill Sheet Legal Disclaimer

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- Providing care within the context of locally available resources, expertise, and scope of practice.
- Supporting consumer rights and informed decision making in partnership with healthcare practitioners including the right to decline intervention or ongoing management.
- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary.
- Ensuring informed consent is obtained prior to delivering care.
- Meeting all legislative requirements and professional standards.
- Applying standard precautions, and additional precautions as necessary, when delivering care.
- Documenting all care in accordance with mandatory and local requirements.

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