

SECONDARY PREVENTION OF ACUTE RHEUMATIC FEVER

Quick Reference Guide for Health Professionals



This quick reference guide is derived from 'National Heart Foundation of Australia (NHFA) and the Cardiac Society of Australia and New Zealand (CSANZ) Diagnosis and management of acute rheumatic fever and rheumatic heart disease in Australia — an evidence-based review. 2006'.

What is acute rheumatic fever?

Acute rheumatic fever (ARF) is an auto-immune response to bacterial infection with group A streptococcus (GAS). People with ARF are often in great pain and require hospitalisation. After the acute episode, rheumatic heart disease (RHD) — damage to the heart valves — may remain. People who have had ARF previously are much more likely than the wider community to have subsequent episodes. Recurrences of ARF may cause further valve damage, leading to steady worsening of RHD.

Who gets acute rheumatic fever?

Although ARF is relatively rare in industrialised countries, it is a significant cause of disease among Aboriginal and Torres Strait Islander peoples. Prevalence of RHD is also high among these populations, with significant rates of procedures and death among young adults.

Secondary prevention

Secondary prevention of further episodes of ARF is a priority. Secondary prophylaxis with regular benzathine penicillin G (BPG) is the only RHD control strategy shown to be effective and cost-effective at both community and population levels.

The appropriate duration of secondary prophylaxis is determined by age, time since the last episode of ARF and potential harm from recurrent ARF, but is likely to be 10 years or more.

While secondary prophylaxis is a proven strategy for controlling RHD and is also simple, cheap and cost-effective, it is not adequately implemented. Persistent high rates of recurrent ARF in high-risk populations highlight the continued failure of secondary prevention.

The effectiveness of secondary prophylaxis is impaired by factors that contribute to poor adherence to antibiotic regimens and increased incidence rates of ARF. These factors relate to overcrowded housing, poor access to health services, limited educational opportunities and poor environmental conditions. Communities with the highest rates of ARF and RHD are often the least equipped to deal with the problem.

Secondary prevention should include:

- strategies aimed at improving the delivery of secondary prophylaxis and patient care;
- provision of education;
- coordination of available health services; and
- advocacy for appropriate resources.

ANTIBIOTIC REGIMENS FOR SECONDARY PROPHYLAXIS

ANTIBIOTIC	DOSE	ROUTE	FREQUENCY
First line			
Benzathine penicillin G	900mg (1,200,000 U) \geq 20kg 450mg (600,000 U) $<$ 20kg	Deep intramuscular injection	4-weekly, or 3-weekly for selected groups*
Second line (if intramuscular route is not possible or refused; adherence should be carefully monitored)			
Phenoxyethylpenicillin (penicillin V)	250mg	Oral	Twice daily
Following documented penicillin allergy			
Erythromycin	250mg	Oral	Twice daily

Notes: * 3-weekly BPG may be considered for patients with moderate or severe carditis or a history of valve surgery who demonstrate good adherence to less frequent injections and for those who have confirmed breakthrough ARF despite full adherence to 4-weekly BPG.

MEASURES THAT MAY REDUCE THE PAIN OF BENZATHINE PENICILLIN G INJECTIONS

- Use a 23-gauge needle
- Warm syringe to room temperature before using
- Allow alcohol from swab to dry before inserting needle
- Apply pressure with thumb for 10 seconds before inserting needle
- Deliver injection very slowly (preferably over at least 2–3 mins)
- Distract patient during injection (eg with conversation)
- (The addition of 0.5–1.0 mL of 1% lignocaine is used elsewhere, but is not recommended with pre-loaded syringes currently available in Australia)

FACTORS THAT AFFECT THE DURATION OF SECONDARY PROPHYLAXIS

FACTOR	IMPLICATION
Age	ARF recurrence is less common between 25–40 yrs and rare >40 yrs
Presence and severity of RHD	ARF recurrence could be life-threatening in people with moderate or severe RHD, or a history of valve surgery
Presence of carditis during initial attack	Increases the likelihood of further cardiac damage should a recurrence occur
Time elapsed since last episode of ARF	ARF recurrences are less common >5 yrs since last episode
Socio-economic circumstances	ARF recurrences are more common in lower socio-economic groups (particularly related to overcrowded housing)
Background risk of GAS infection and ARF within the community	ARF recurrences are more common in higher-incidence communities or settings
Adherence to treatment	Optimised adherence for a few years after the initial attack may provide greater protection from recurrences than offered by poor adherence for many years
Assessment at time of cessation of secondary prophylaxis	Evidence of moderate or greater RHD may warrant prolonged prophylaxis

DURATION OF SECONDARY PROPHYLAXIS

CATEGORY	DEFINITION OF CATEGORY	DURATION
All persons with ARF or RHD*		Minimum 10 yrs after most recent episode of ARF or until age 21 yrs (whichever is longer)
Status after initial period elapsed		
No RHD		Discontinue at that time [#]
Mild RHD	Mild mitral or aortic regurgitation clinically and on echocardiography, with no clinical evidence of heart failure and no evidence of cardiac chamber enlargement on echocardiography	Discontinue at that time
Moderate RHD	Any of : <ul style="list-style-type: none"> • any valve lesion of moderate severity clinically (eg mild or moderate cardiomegaly and/or mild or moderate heart failure) or on echocardiography • mild mitral regurgitation together with mild aortic regurgitation clinically or on echocardiography • mild or moderate mitral or aortic stenosis • any pulmonary or tricuspid valve lesion coexisting with a left-sided valve lesion 	Continue until age 35 yrs
Severe RHD	Any of: <ul style="list-style-type: none"> • any severe valve lesion clinically (eg moderate to severe cardiomegaly or heart failure) or on echocardiography • any impending or previous cardiac valve surgery for RHD 	Continue until age 40 yrs, or longer [†]

Notes:

- * Patients >25 years of age who are diagnosed with RHD without any documented history of prior ARF should receive prophylaxis until the age of 35 years. At this time they should be reassessed to determine whether prophylaxis should be continued.
- # Decisions to cease secondary prophylaxis should be based on clinical and echocardiographic assessment.
- † The risk of recurrence is extremely low in people aged >40 years. In some cases, for example when the patient decides that they want to reduce even a minimal risk of recurrence, prophylaxis may be continued beyond age 40 years, or even for life.

IMPROVING ADHERENCE TO SECONDARY PROPHYLAXIS

A variety of factors, mainly sociological, combine to limit the efficacy of secondary prophylaxis. A major reason for poor adherence in remote Australian Aboriginal and Torres Strait Islander communities is the availability and acceptability of health services, rather than personal factors such as injection refusal, pain of injections, or a lack of knowledge or understanding of ARF and RHD.

Adherence is improved when patients feel a sense of personalised care and “belonging” to the clinic, and when recall systems extend beyond the boundaries of the community.

Organisational approaches to secondary prophylaxis (including the use of registers) are outlined in the quick reference guide *RHD Control Programs*.

Strategies to promote continuing adherence include:

- routine review and care planning (see next page);
- recall and reminder systems;
- having local staff members dedicated to secondary prophylaxis and coordinating routine care;
- supporting and utilising the expertise, experience, community knowledge and language skills of Aboriginal health workers;
- improving staff awareness of diagnosis and management of ARF and RHD;
- taking measures to minimise staff turnover;
- implementing measures to reduce the pain of injections.

PROCEDURES REQUIRING ENDOCARDITIS PROPHYLAXIS FOR PATIENTS WITH RHD

Infective endocarditis is a dangerous complication of RHD and a common adverse event following prosthetic valve replacement in Aboriginal and Torres Strait Islander Australians.

People with established RHD or prosthetic valves should receive antibiotic prophylaxis prior to undergoing procedures expected to produce bacteraemia (see below).

DENTAL, ORAL AND RESPIRATORY TRACT PROCEDURES

- Dental extractions
- Periodontal procedures
- Dental implant placement
- Gingival surgery
- Initial placement of orthodontic appliances
- Surgical drainage of dental abscess
- Maxillary or mandibular osteotomies
- Surgical repair or fixation of a fractured jaw
- Endodontic surgery and instrumentation
- Placement of orthodontic bands
- Intraligamentary local anaesthetic injections
- Tonsillectomy/adenoidectomy
- Rigid bronchoscopy
- Surgery involving the bronchial mucosa
- Sclerotherapy of oesophageal varices
- Dilatation of oesophageal stricture

ANTIBIOTIC

DOSE

For patients on long-term penicillin therapy, hypersensitive to penicillin, or who have taken penicillin or related beta-lactam antibiotic more than once in the last month:

Clindamycin (Child: 15mg/kg up to) 600mg orally as a single dose 1 hour before procedure

If unable to take orally

Clindamycin (Child: 15mg/kg up to) 600mg IV, over at least 20 mins just before procedure

OR Vancomycin (Child: 20mg/kg up to) 1g IV, over at least 1 hour just before procedure

For patients not on long-term penicillin therapy, not hypersensitive to penicillin, and who have not taken penicillin or related beta-lactam antibiotic more than once in the last month:

Amoxicillin (Child: 50mg/kg up to) 2g orally as one dose 1 hour before the procedure

OR Amoxicillin/ampicillin (Child: 50mg/kg up to) 2g IV just before procedure or IM (30 mins prior)

GENITOURINARY AND GASTROINTESTINAL PROCEDURES

- Surgery of the intestinal mucosa or biliary tract (except for endoscopy, biopsy and percutaneous endoscopic gastrostomy)
- Endoscopic retrograde cholangiography
- Prostate surgery
- Cystoscopy and urethral dilatation
- Vaginal delivery in the presence of infection, prolonged labour or prolonged rupture of membranes
- Genitourinary surgical procedures in the presence of infection (eg urethral catheterisation, uterine dilatation and curettage, placement or removal of intrauterine contraceptive devices)

ANTIBIOTIC

DOSE

Gentamicin (Child: 2.5mg/kg) 2mg/kg IV just prior to procedure or IM (30 mins prior)

PLUS Vancomycin (Child: 20mg/kg up to) 1g IV over at least 1 hour just prior to procedure

OR Teicoplanin (Child: 10mg/kg up to) 400mg IV just prior to procedure

RECOMMENDED ROUTINE REVIEW AND MANAGEMENT PLAN FOR ARF AND RHD

CRITERIA	REVIEW AND MANAGEMENT PLAN	FREQUENCY
Low risk ARF with no evidence of RHD or Trivial to mild valvular disease	Secondary prophylaxis (BPG) Doctor review Echocardiography	4-weekly Yearly Children 2-yearly [†] Adults 2–3 yearly [†]
Medium risk Any moderate valve lesion in the absence of symptoms and with normal left ventricular function or Mechanical prosthetic valves	Secondary prophylaxis (BPG) Doctor review Influenza vaccination ECG (optional) Cardiologist/physician/paediatrician review Echocardiography Dental review Polysaccharide pneumococcal vaccination Endocarditis prophylaxis	4-weekly 6-monthly Yearly Yearly Yearly Yearly 5-yearly (max 3 doses) As required
High risk Severe valvular disease or Moderate/severe valvular lesion with symptoms or Tissue prosthetic valves and valve repairs	Secondary prophylaxis (BPG) Doctor review Cardiologist/physician/paediatrician review Influenza vaccination Echocardiography Dental review Polysaccharide pneumococcal vaccination Endocarditis prophylaxis Warfarin + aspirin	3–4 weekly 3–6 monthly 3–6 monthly Yearly 3–6 monthly Within 3 months and yearly thereafter 5-yearly (max 3 doses) As required As prescribed
Additional considerations Following valve surgery Missed doses of BPG Patient travelling to another community when injection due	Medical assessment ECG Chest radiograph Echocardiography Full blood count Urea, creatinine, electrolytes International normalised ratio if indicated Patient should be contacted if they have not presented within 3 days of due injection Consideration should be given to bringing forward the date of injection to 2–3 weeks, or arrangements made with other service providers in advance	3–4 weeks post-discharge

Note: † If there is no evidence of valvular disease on echocardiography, no documented ARF recurrences, good adherence to secondary prophylaxis, and no cardiac murmurs on examination at follow-up appointments, echocardiography may not be needed as frequently.

FURTHER INFORMATION

The full evidence-based review from which this quick reference guide is derived provides detailed information on the diagnosis and management of ARF, secondary prevention and RHD control programs, and diagnosis and management of RHD.

Other quick reference guides are:

- *Diagnosis of Acute Rheumatic Fever*
- *Management of Acute Rheumatic Fever*
- *Rheumatic Heart Disease Control Programs*
- *Management of Rheumatic Heart Disease.*



These publications are available from the National Heart Foundation of Australia through:

Heartline 1300 36 27 87 or
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Heartsite www.heartfoundation.com.au