

Practical Cardiology management in rural Aboriginal communities

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Cardiology experience in the Kimberley

- PCI services
 - Broome
 - Kununurra
 - Halls creek
 - Balgo community
 - Fitzroy valley communities
- Rheumatic Heart Disease
- Ischaemic heart disease
- Congestive heart failure
- Other chronic diseases





ACUTE RHEUMATIC FEVER & RHEUMATIC HEART DISEASE are PREVENTABLE and NOTIFIABLE



INVESTIGATIONS FOR ARF

Admit to hospital

BLOODS - WCC / ESR / CRP (blood cultures if febrile)

BLOODS - ASO / anti-DNase B titres

ECG / CXR / Echocardiogram

Throat/skin sore swab - culture for *strep A*

The burden of disease – worldwide



RF mortality, USA

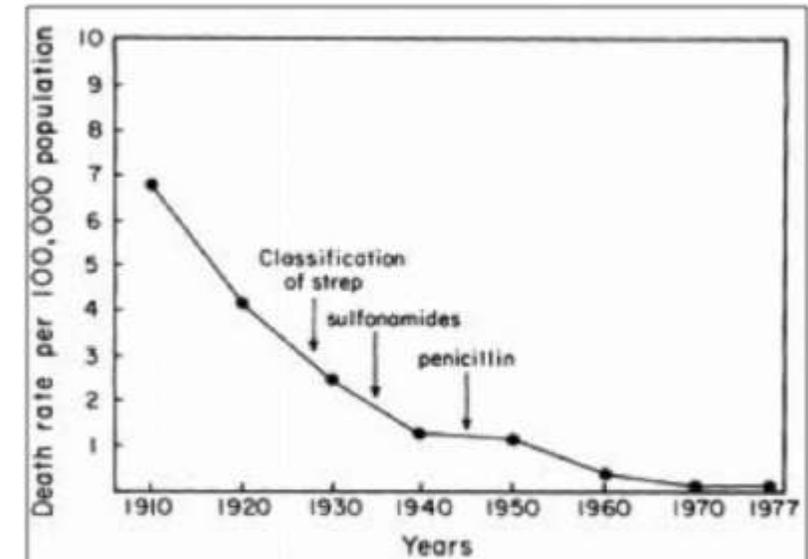
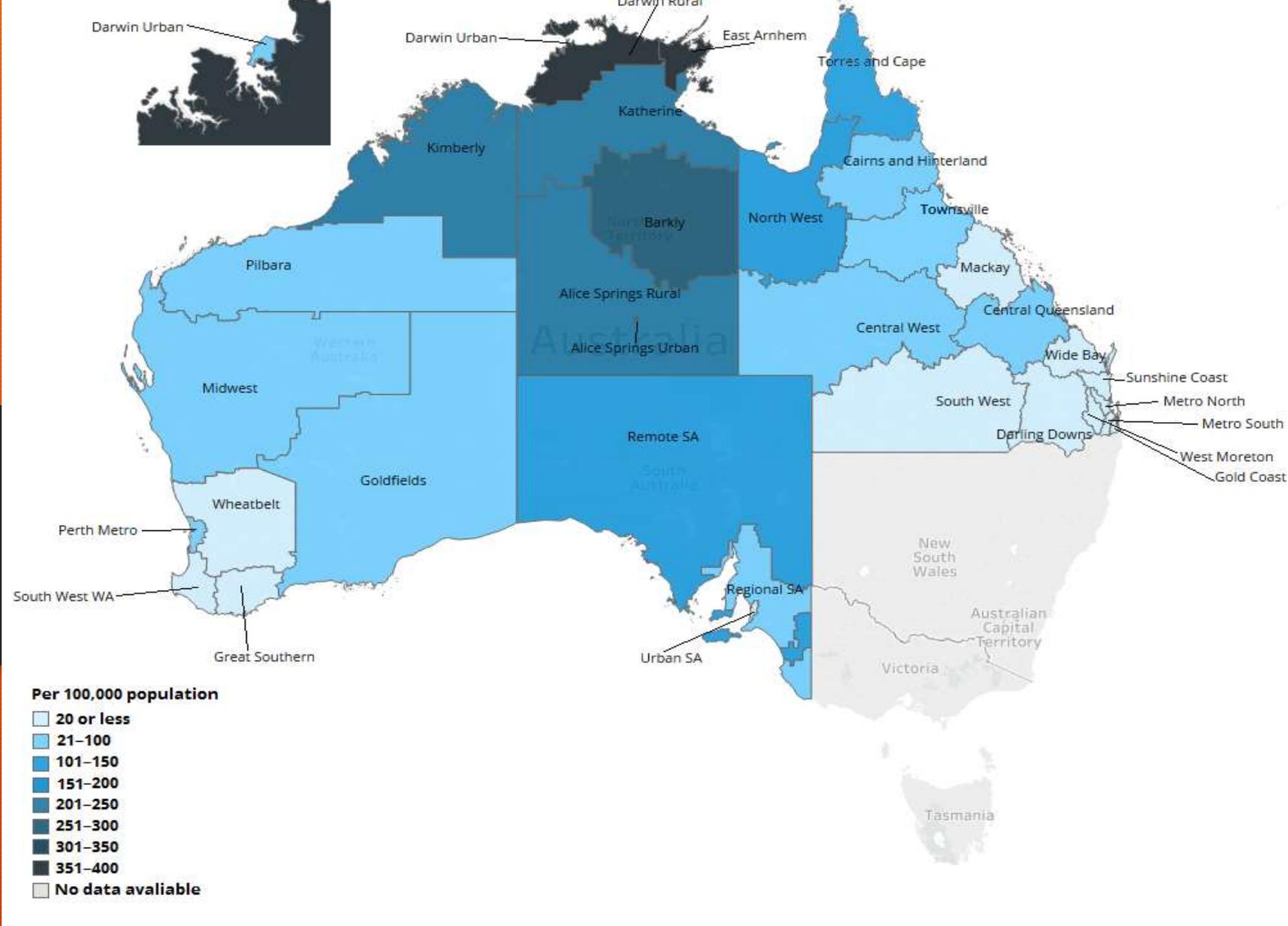


FIGURE 7. Crude death rates from rheumatic fever, United States, 1910–1977.

Gordis L. The virtual disappearance of rheumatic fever in the United States: lessons in the rise and fall of disease. T Duckett Jones Memorial Lecture. *Circulation* (1985) 72:1155-1162

RHDAustralia (ARF/RHD writing group). The 2020 Australian guideline for prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease (3rd edition), 2020.

The burden of ARF – Australia

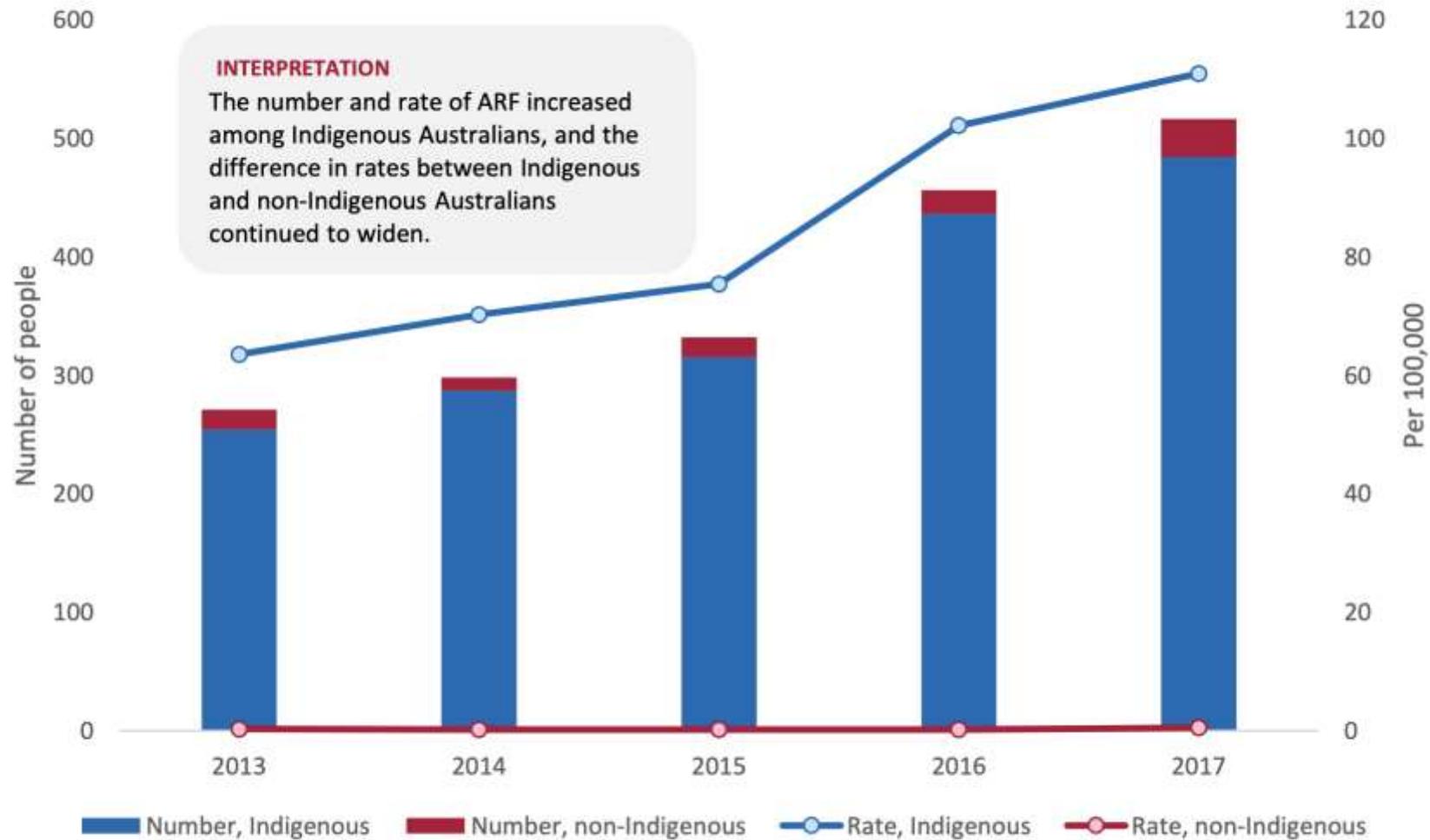


Rate of ARF diagnoses per 100,000 among Aboriginal and Torres Strait Islander Australians by region of management jurisdiction registers 2013–2017 (AIHW 2019)

RHDAustralia (ARF/RHD writing group). The 2020 Australian guideline for prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease (3rd edition), 2020

Aboriginal and Torres Strait Islander peoples

Figure 3.7. Number and rate of new ARF diagnoses recorded on RHD registers among Australians living in the NT, SA, WA and QLD, 2013–2017



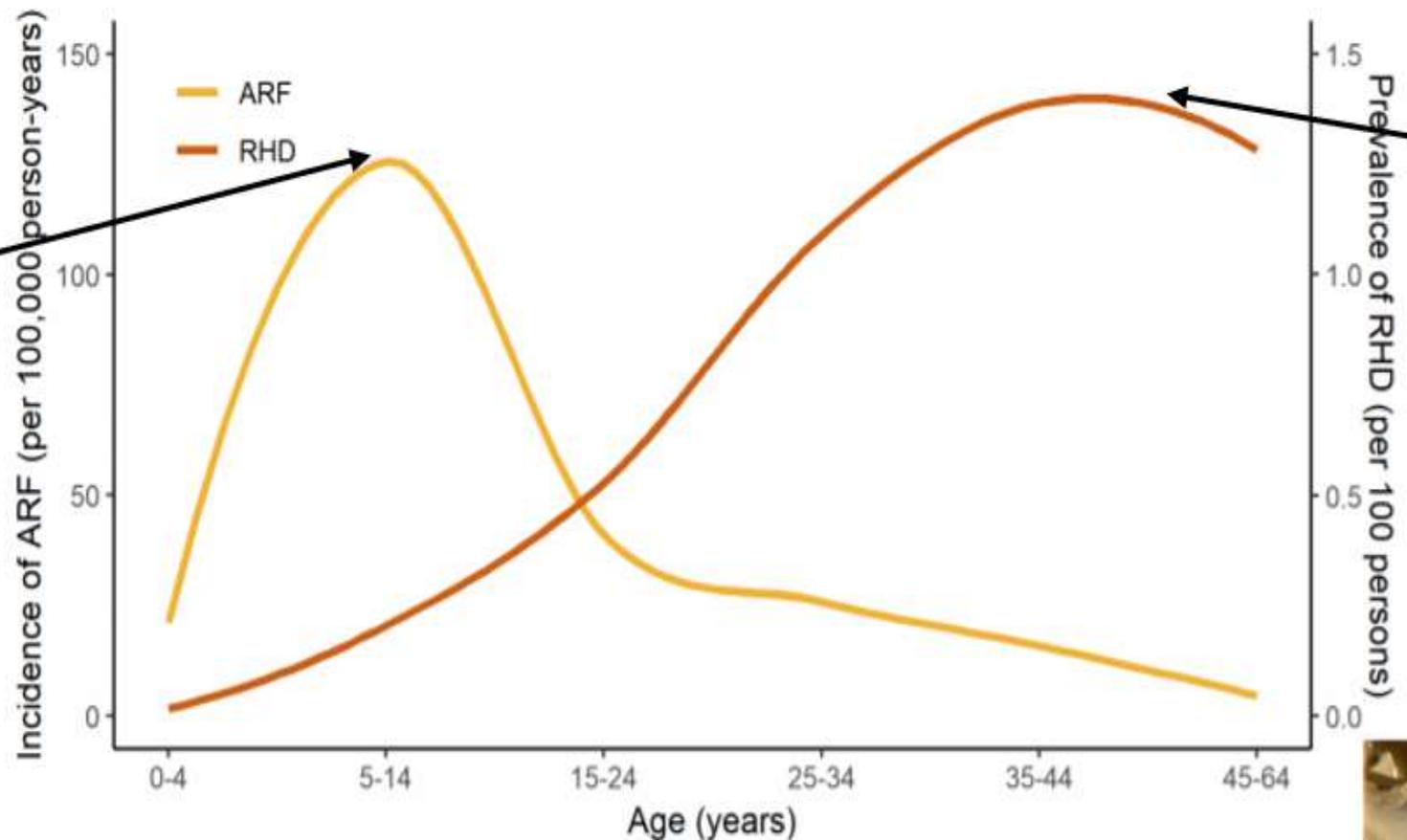
Source: Australian Institute of Health and Welfare 2019. Acute rheumatic fever and rheumatic heart disease in Australia. Cat. no: CVD 86. Canberra.



Age at hospitalisation

INTERPRETATION

A FIRST EPISODE of ARF (*incidence*) is most common in children aged 5-14 years, and gradually becomes less common as people get older.



INTERPRETATION

The number of people living with RHD (*prevalence*) steadily increases with age and then starts to decline from the age of 35 years as survival is reduced.

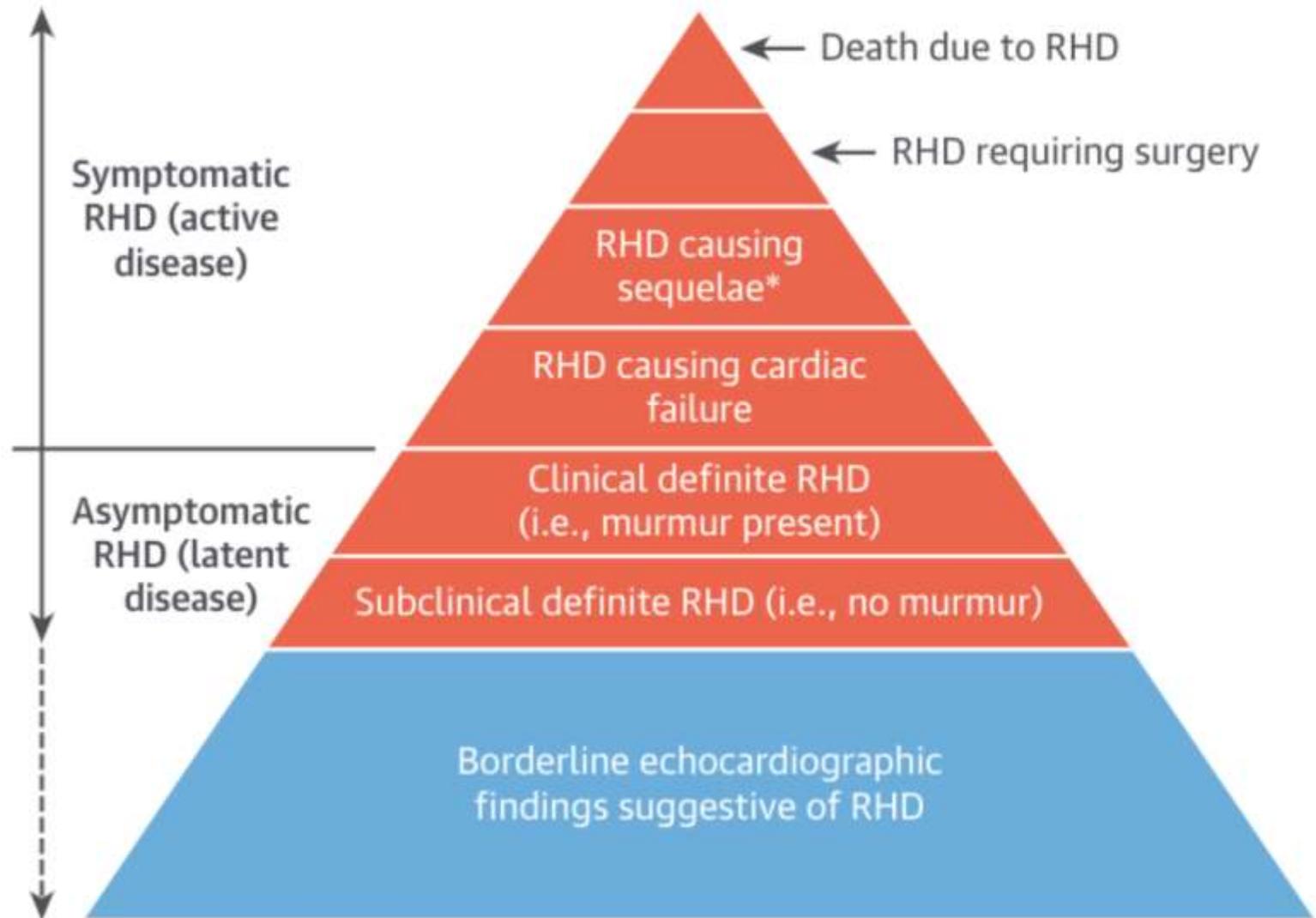
Hospitalised incidence of ARF between 2014 and 2016 and prevalence of RHD in mid-2016 in the NT, QLD, SA and WA

Source: Wyber R, Cannon J, Katzenellenbogen, J. *The Cost of Inaction on Rheumatic Heart Disease: The predicted human and financial costs of rheumatic heart disease for Aboriginal and Torres Strait Islander people 2016-2031. The END RHD CRE, Telethon Kids Institute. Perth. 2018*



Objectives

FIGURE 4 The Spectrum of RHD



Socio-ecological model: A framework for Prevention

Figure 2.1. Socio-ecological model underpinning the guidelines



RHDAustralia (ARF/RHD writing group). The 2020 Australian guideline for prevention, diagnosis and management of acute rheumatic fever and rheumatic heart disease (3rd edition), 2020.

Primordial

**Stop
development of
risk factors**

**Prevent GAS
infections**

Primary

**Target
populations at
risk**

**Stop / Treat
sore throats &
manage skin
sores**

Secondary

**Diagnose &
manage ARF**

**Secondary
Prophylaxis
with BPG**

Tertiary

**Surgical
intervention**

**Valve
replacement**

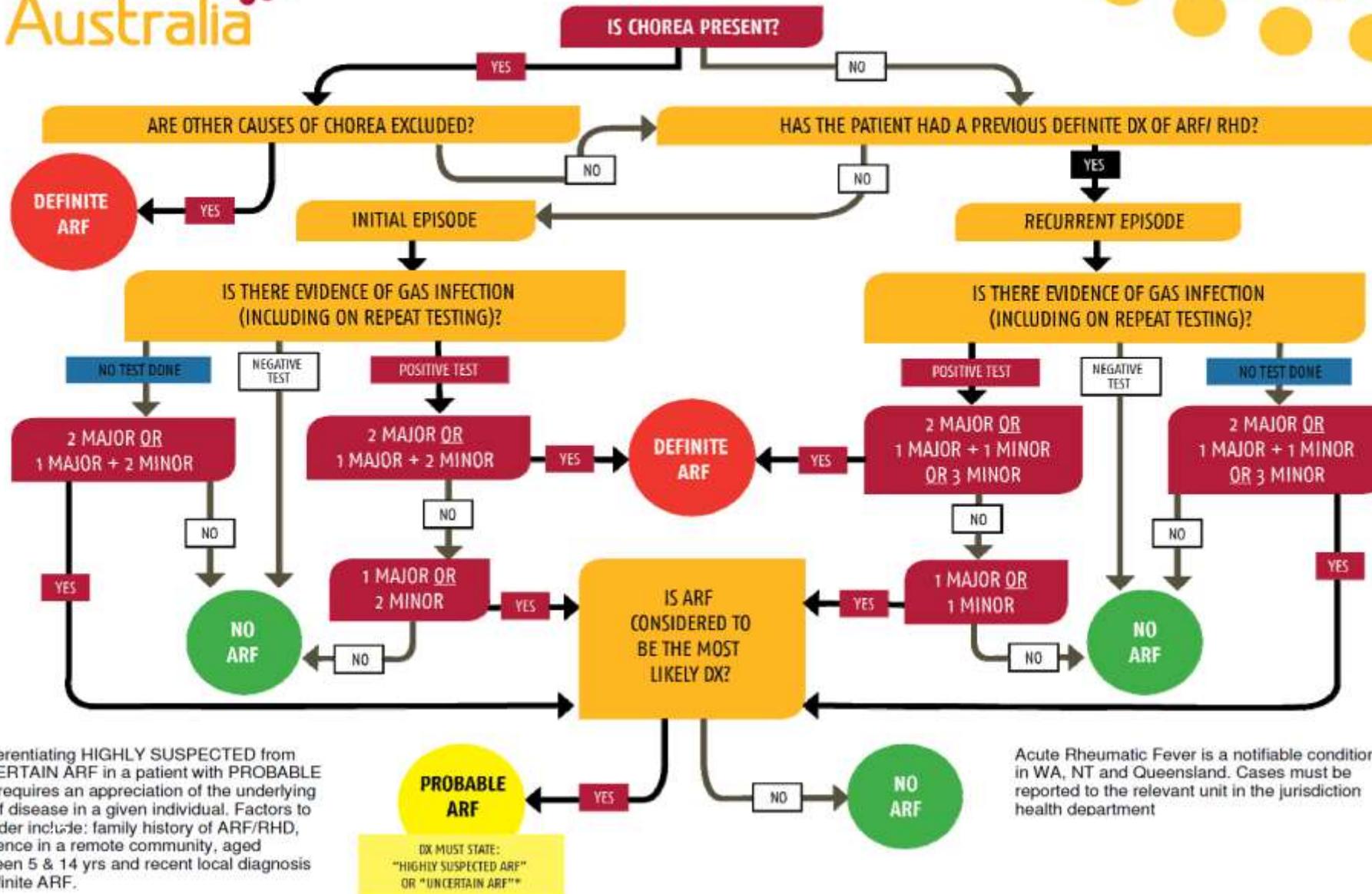
Screening for RHD

- Public health criteria for screening
- Screening models - *expert vs non-expert*
- Risks and benefits of screening



ARF DIAGNOSIS FLOWCHART

(based on the 2012 Australian ARF/RHD Guidelines)



* Differentiating HIGHLY SUSPECTED from UNCERTAIN ARF in a patient with PROBABLE ARF requires an appreciation of the underlying risk of disease in a given individual. Factors to consider include: family history of ARF/RHD, residence in a remote community, aged between 5 & 14 yrs and recent local diagnosis of definite ARF.

Acute Rheumatic Fever is a notifiable condition in WA, NT and Queensland. Cases must be reported to the relevant unit in the jurisdiction health department



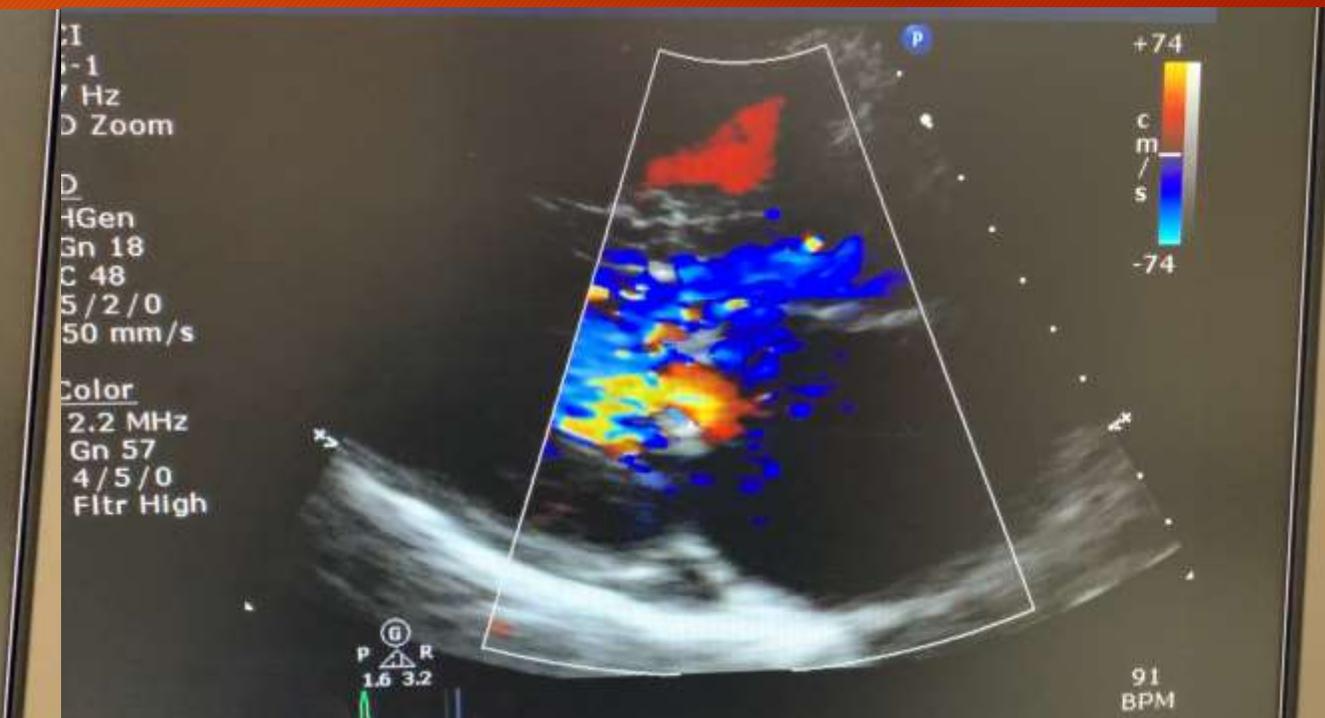
Clinical case “Rebecca”

- 42 yo Aboriginal lady from Halls Creek
- RHD since 2009 - Dx aged 31
 - No documented ARF
 - Severe mitral stenosis - mitral balloon valvotomy in 2009 and 2010
 - In sinus rhythm
- Bipolar disorder
- Cannabis use

Case 1

- Referred to PCI in May 2019
- No Echo since 2016
- Echo 2018: Mild to Mod mitral stenosis and Mild mitral regurgitation, Mild Pulmonary hypertension; Mild AR
- August 2020: Mod to severe mitral stenosis, mild to mod MR; Severe pulm hypertension, mild AS and mod AR

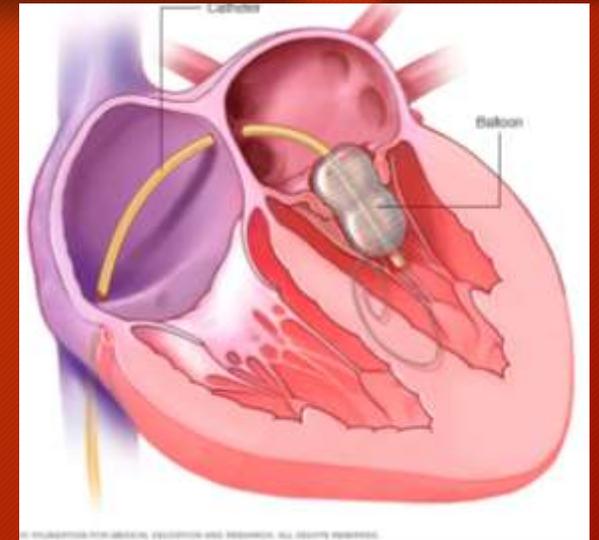
Now symptomatic - NYHA II - was playing Football until recently
Difficult to determine symptoms



Mitral balloon valvotomy

Balloon valvotomy allows for avoidance of mechanical MVR during potentially child-bearing years

Only suitable if minimal
Mitral regurgitation
Calcification of valve leaflets
And if reasonable leaflet motion



Options for Rebecca?

- Balloon valvotomy (repeat) - MR / calcification can be a concern
- Bioprosthetic MVR - good option for women of childbearing age.
 - Not as durable - lifespan 5-10 years average
- Prosthetic MVR - durable, but lifelong warfarin

Surgical work-up and review

- Coronary angiogram
- TOE
- Dental review
- Carotid Doppler studies
- Blood tests
- Surgical review



What happened to our patient?

- Admitted to hospital with mental health crisis
- Discharged from FSH due to non-attendance
- At this point unable to contact for follow-up appointment
- Concern of presenting with acute pulmonary oedema or with established pulmonary hypertension
- The story is to be continued...

Practical Cardiology approach

- Education - using heart models / diagrams / analogies
- Patient connection and continuity
 - Involving local “champions”
 - Chronic disease nurses
 - Local GPs
 - Physician service
- Opportunistic LA Bicillin injections - in a sensitive / appropriate way
- Building relationships

Ischaemic Heart Disease

- IHD is the leading cause for premature death in Aboriginal australians
- Standardized death rate for Aboriginal patients with IHD is double that for non-Aboriginal patients;
- Risk factors are more prevalent
 - Smoking (40% vs 18%), Diabetes (18% vs 5%), Obesity, CKD, HTN, Stress
- Some patients in 20s and 30s present with IHD
- Women are more likely to present with ST elevation MI than men

Barrier to appropriate investigations in the Kimberley

- Stress echocardiograms - available for Broome patients
- Exercise (treadmill) ECG - Broome, Derby, Kununurra
- CT Coronary angiogram - not available in Kimberley
- Nuclear medicine scans (eg myocardial perfusion scan) not available

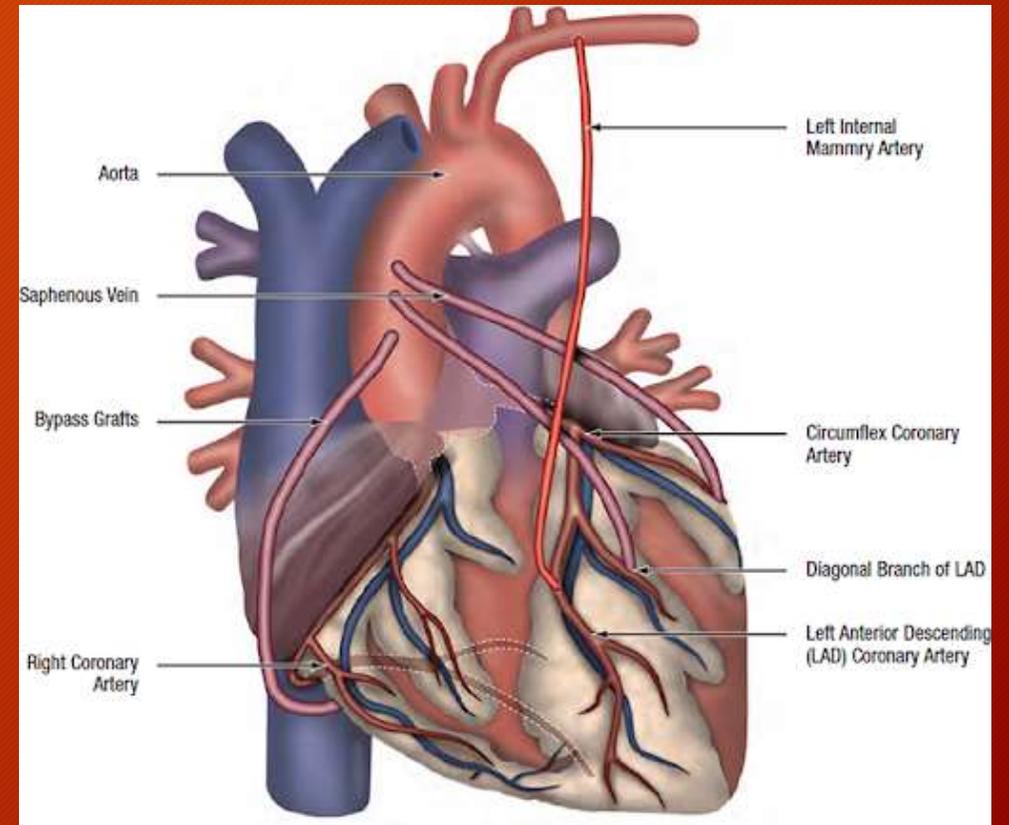


Practical solutions to Geographical challenges

- Treat if suspected Coronary artery disease
- Can use available investigation in the interim
- Low threshold for travel to Perth for definitive investigation, and low threshold for invasive Coronary angiography
- Use of Telehealth - if urgent Coronary Angiogram required (ie within 1 month for Priority 1 referrals)
- Liaise with local clinic / AMS. !!

Barriers to appropriate treatment

- Delays in seeking treatment
- Compliance and perception
 - PCI vs CABG ?
- Compliance with medications
- Diet and Exercise prescription
 - Diet affected by local environment
- Post discharge management



The Lighthouse hospital project



- A project aimed at improving CV outcomes in Aboriginal patients attending tertiary hospitals
- Initiated in 2012, several hospitals took part - including RPH, FSH
- Lighthouse Toolkit included
 - Expanding Aboriginal health staff workforce
 - Identifying patients as Aboriginal or TSI
 - Engaging local communities
 - Reducing Discharge against Medical Advice
 - Fostering champions on clinical staff
 - Delivering patient-centered care

Congestive heart failure

- Final pathway for number of cardiac diseases
 - Ischaemic heart disease
 - Rheumatic valve disease
 - Hypertensive heart disease
 - Alcoholic cardiomyopathy
 - Inherited cardiomyopathy

Challenges chronic heart failure management in the Kimberley

- Compliance
- Medication up-titration of prognostic HF medications
- Fluid balance and fluid restriction during different seasons
- Education
- Frequency of repeat echocardiograms / Cardiology review
- Continuity of care
- Access to Investigations: eg CTCA, Cardiac MRI, Nuc medicine
- Cardiac exercise rehabilitation

Practical solutions to heart failure and other chronic disease management

- Can not use “one size fits all” approach
- Empowering local medical officers to uptitrate medical Rx
- Liaising with Physician service, other Specialties
- Culturally appropriate education - improving health literacy
- Understanding local Socio-economic factors influencing risk factors
 - Lobbying for change
- Continuity - building relationships
- Understanding that we need to do better



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