

## Conclusion

These observations support our hypothesis that dysregulated inflammatory responses contribute to the increased susceptibility of diabetics to melioidosis and novel therapeutic approaches for managing the immune dysfunction will be useful adjuncts to current management of severe bacterial infections.

## A Novel Model to Assess Disease Severity and Prevention Strategies in Rheumatic Heart Disease

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### Background

Rheumatic fever (RF) can follow group A streptococcal infection (GAS) and may affect heart valves (rheumatic heart disease, RHD). In the absence of appropriate treatment, repeated occurrences of RF may lead to heart failure. RF/RHD remain the major cause of cardiovascular morbidity and mortality among children and young adults in many underdeveloped, tropical regions. This includes some communities in Australia's north which have unacceptably high rates of RF/RHD.

We are using a novel rat autoimmune valvulitis model to determine heart disease severity following repetitive group A streptococcal infection and to assess prevention strategies.

### Methods

Rats were immunised and boosted 1-3 times with group A streptococcal M protein. A proportion of rats were given daily doses of anti-fibrotic drug Enalapril at 10mg/kg. Disease severity was assessed histologically and electrophysiological changes analysed by ECG and echocardiography. Antibody and T cell immune responses were measured by ELISA and proliferation assays respectively.

### Results

Rats boosted 2-3 times with GAS M protein had higher immune responses and more severe heart damage than those boosted once only. There was a trend towards longer PR interval and decreased fractional shortening in M protein-immunised rats compared to control rats.

### Conclusions

This model demonstrates many of the immune and functional responses characteristic of RF/RHD and provides a valuable tool for better understanding disease progression and evaluating treatment or vaccination strategies.