

chordal structures. Using these criteria, we were able to document an excellent level of interobserver agreement for the detection of early rheumatic valve disease.

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## Rheumatic Heart Disease in Developing Countries

**TO THE EDITOR:** In his Perspective article on rheumatic heart disease in developing countries, Carapetis (Aug. 2 issue)<sup>1</sup> correctly notes the important contribution of improved living conditions to the decline in the incidence of acute rheumatic fever over recent decades in wealthy countries. However, he does not acknowledge the contribution of the very substantial decrease in the prevalence of highly rheumatogenic *emm* types of group A streptococci as causative agents of acute pharyngitis.

Our surveillance studies of pediatric pharyngitis group A isolates in the United States and Canada from 2000 through 2005 showed a striking disappearance of *emm* types 14, 18, 19, and 29 or a marked decrease of *emm* types 3, 5, and 6. These have been the most important rheumatogenic types from the 1960s (when rheumatic fever was prevalent) to the present decade (when rheumatic fever is quite rare).<sup>2</sup> The basis for this marked decline in circulating rheumatogenic types is not clear, but it is very likely to be independent of the changes in living conditions.

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**THE AUTHOR REPLIES:** It may well be that changes in the virulence of circulating group A streptococci have accounted for much of the decline in the incidence of rheumatic fever since the late 1960s

in the United States. However, approximately 95% of the reduction in the rate of death due to rheumatic fever during the 20th century in the United States occurred before 1960,<sup>1</sup> probably because of reduced group A streptococcal transmission resulting from an improved housing infrastructure.

I agree with the concept of “rheumatogenic” group A streptococci, but studies in areas where rheumatic fever is common have not shown associations with classic rheumatogenic *emm* types.<sup>2,3</sup> In these settings, rheumatogenic strains, regardless of the *emm* type, are probably always circulating — hence the endemic rather than epidemic disease pattern.<sup>4</sup> In populations in which dozens of streptococcal strains are present at any one time,<sup>5</sup> dramatic reductions in overall transmission rates will be necessary before we can expect to see a waning of particular rheumatogenic strains.

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