

## Does it make sense to detect *Streptococcus pyogenes* during tonsillitis in Europe to prevent acute rheumatic fever?

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French health authorities constantly publish public health recommendations, and ever since the pay-for-performance (P4P) programme was implemented in France, physicians have been more motivated to follow them [1]. Currently, guidelines regarding pharyngeal infection, one of the most common community-acquired infections [2], recommend the use of a Centor clinical scoring system to identify patients with a high probability of group A streptococcus (GAS) pharyngitis, and the use of rapid antigen tests (RATs) to confirm the microbiological diagnosis [3]. Antibiotic therapy is recommended only for patients with microbiological evidence of GAS, with the aims of reducing the duration and severity of clinical symptoms and of preventing post-streptococcal complications. The public health objectives of these guidelines are to avoid inappropriate antibiotic treatments, to minimize the risk of antibiotic resistance, and to limit pharmaceutical expenditures. Despite the P4P incentives, there remained some risk-averse physicians who prescribed more antibiotics when they did not use RATs than risk-tolerant doctors did [4].

To date, these guidelines are considered to represent the best practices for pharyngitis. However, upon what evidence are these recommendations based? What is the strategy of the

risk-averse physicians who did not follow tonsillitis guidelines and prescribed more antibiotics? Most guidelines recommend antibiotic treatment in all patients with symptomatic pharyngitis and microbiological evidence of GAS in the pharynx. However, no antibiotic regimen eradicates GAS from the pharynx in 100% of treated patients [5], and the antibiotic has only a modest effect in reducing the symptoms of tonsillitis [3,6]. Antibiotic therapy is primarily helpful to prevent acute rheumatic fever; however, this evidence was found only in trials conducted during the 1950s and 1960s, when the incidence of rheumatic fever was dramatically higher than it is now. The incidence of rheumatic fever remains significant in developing countries, and can reach 80–254 per 100 000 in indigenous Australian communities [7], but in developed countries the disease has been almost eradicated and remains exceptional. Consequently, guidelines for the management of tonsillitis in Europe have become outdated. In fact, only 32 cases of acute rheumatic fever in children aged 5–14 years were reported between 1995 and 1997 in France [8]. Among these cases, 12 of 32 (37.5%) did not present with an episode of pharyngitis before the diagnosis of rheumatic fever; therefore, it could not have been prevented with antibiotics.

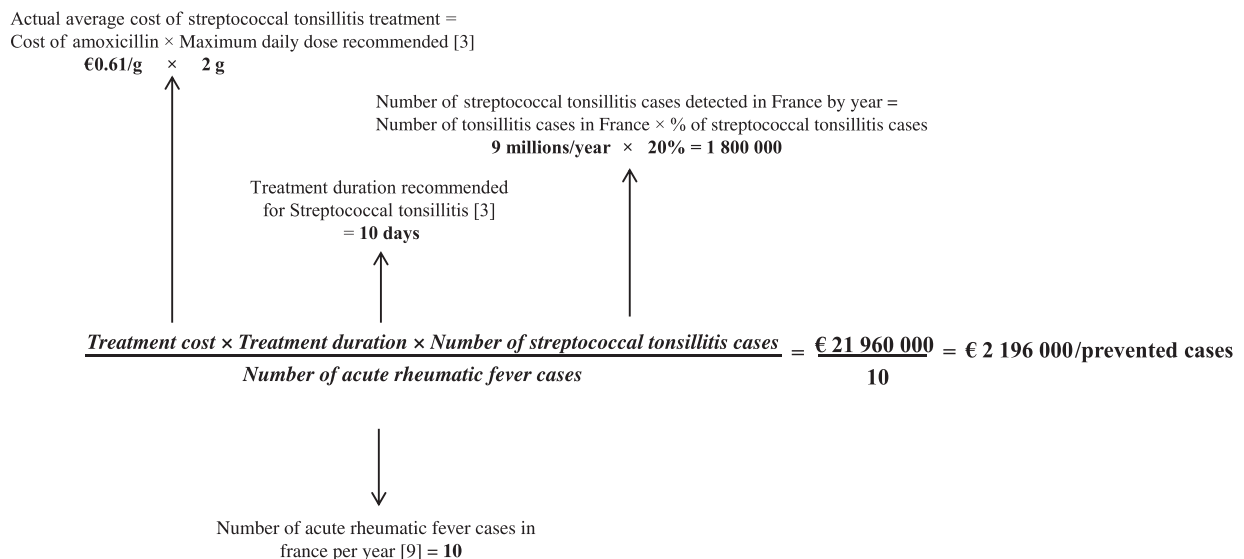


FIG. 1. Evaluation of the cost of antibiotic treatment of streptococcal tonsillitis to prevent a putative case of acute rheumatic fever in France.

Moreover, half of these patients diagnosed with tonsillitis received antibiotics that failed to prevent acute rheumatic fever. Furthermore, the beneficial effect of antibiotics to prevent post-streptococcal glomerulonephritis and suppurative complications remains unclear [3]. Finally, it is likely that the incidence of rheumatic fever in France has declined even further over the past two decades.

Guidelines have been mainly or exclusively focused on GAS or related clinical presentations. Throat swab cultures are now less often performed in favour of RATs, despite the advantage that culture methods have of identifying other causes of bacterial pharyngitis. This strategy is harmful, because it obscures the detection of other aetiological agents responsible for pharyngitis that now go undetected by routine diagnosis in clinical microbiology laboratories. In fact, the pathogenic role of emerging bacteria, such as *Fusobacterium necrophorum*, has been demonstrated in recent years. With the use of culture or quantitative PCR on throat swabs from patients presenting with acute pharyngitis, *F. necrophorum* was found with a prevalence range of 4.9% [9] to 10% [10]. The prevalence seems to be higher in young adults; Amess *et al.* reported a prevalence of 9.7% among patients aged 11–25 years [9], and Jensen *et al.* a prevalence of 51% among patients aged 18–32 years with non-streptococcal tonsillitis [11]. Like GAS, *F. necrophorum* can also be carried asymptotically in the pharynx, with a prevalence range from 0% to 21% [10,11].

We computed the cost of prevention of a putative case of rheumatic fever (Fig. 1). Our analysis showed that the total cost of treatment of pharyngitis in France is €21 960 000, which brings us to a cost of €2 196 000 per case of rheumatic fever. Every year, millions of euros are spent to prevent a disease that no longer exists in France. This cost of preventing rheumatic fever is very important, because the guideline recommends treatment with antibiotic therapy for all streptococcal tonsillitis cases.

We believe that a reassessment of the management of acute pharyngitis is required. Bacterial agents other than GAS may be responsible for acute sore throat, and should not be underestimated. We suggest that future recommendations be based more on the clinical severity and the evolution of the patient, and focus less on the detection of GAS. Overtreat-

ment of streptococcal pharyngitis leads to inappropriate antibiotic use, which can be avoided by clinical evaluation of the need for antibiotic treatment.

## Transparency Declaration

No conflict of interest declared.

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