Fever: A Return to Basics!

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Fever is a physiological response to infection which seems to have evolved and been preserved in humans over eons of time. It is a protective mechanism and, except for the rare circumstance of a central nervous system condition such as hypothalamic disease, the body will not allow lethal hyperpyrexia so long as (*a*) hydration remains adequate and (*b*) the body is provided an environment which allows for heat loss(1). As such, the primary question should actually be not how to best treat fever but whether to treat it at all!

The main aim in treating fever, therefore, shifts from clinical and medical concern to one of patient comfort. Providing this comfort should be balanced against the potential negative sequel of fever treatment: dulling a physiologically positive response to infection, diverting parental and medical attention away from concentrating on the cause of the fever rather than the fever itself, and even the possibility of increased nosocomial infections and serious poisoning(2,3). Some authors maintain that febrile seizures actually occur with increased frequency in children who have been exposed to sponging(4), possibly due to intense vasoconstriction diverting blood centrally and leading to a sudden or marked rise in core temperature. Vigorous attempts at antipyresis have failed to prevent recurrence of febrile seizures.

This being said, the article by Thomas, *et al*.(5) in this month's *Indian Pediatrics* revisits the interesting question of how best to reduce fever. Utilization of axillary temperature as their primary endpoint reflects common practice, but it must be remembered that although a temperature gradient exists from axillary to oral to rectal temperature on a population basis; within an individual, patient correlation between axillary and core temperature is very poor(6). Thus their endpoint may not truly reflect changes in core temperature. Secondly, these authors used a dose of 10 mg/kg of paracetamol despite the fact that 15 mg/kg is the recommended antipyretic dose(7). Thirdly, the change of 0.4°F which they used for their power calculations is probably not of great clinical significance.

Thomas, *et al*. show that tepid sponging added nothing to the antipyretic effect of paracetamol after two hours; even though a more rapid initial fall in temperature was noted. Furthermore, they stress that tepid sponging was uncomfortable for patients. Their findings and conclusions support the idea that the aim of therapy in febrile children should be to concentrate on the investigation and treatment of the cause of the fever while ensuring adequate hydration, minimal loose clothing and patient comfort. At a more universal level, their findings could be used to try and counter the fever phobia which seems to be consuming not only parents but the medical community as well!

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Iron Supplementation for Improving Mental Development

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In the absence of a simple, reliable and cheap indicator of iron status, anemia is invariably used to quantify the burden of this micronutrient deficiency in public health settings. Anemia is a major public health problem, particularly in the developing countries where nearly two billion individuals are affected, with a significant proportion being constituted by children and women of childbearing age(1). The etiology of anemia is multifactorial; however, from a public health perspective, iron deficiency is believed to be the most important causal factor. The World Health Organization estimates that roughly 50% of anemia prevalence can be attributed to iron deficiency(1). Evidence links iron deficiency to several functional consequences; an important one of these is mental and motor development in children.

Animal studies have provided a number of possible mechanisms through which iron deficiency can leave an imprint on the developing brain(2). Most observational studies in children have found associations between iron deficiency anemia and poor cognitive and motor development, and behavioral problems(3). Longitudinal studies consistently indicate that children who were anemic in infancy continue to have poorer cognition, school achievement, and more behaviour problems into middle childhood(4). However, the possible confounding effects of environmental factors, particularly poor socio economic background, prevent causal inferences from being made.

Sen, *et al.*(5) present evidence from a controlled intervention trial that iron and folic acid supplementation in children aged between 9 and 13 years leads to modest (1.5 to 2 units on a scale of 100) but significant improvement in the various cognitive tests. The benefits were greater in anemic subjects, those with higher hemoglobin increments and with better compliance, and with increasing frequency of supplementation. However, certain methodological and analytical issues need consideration while interpreting the findings. The authors did not rigorously evaluate important confounders of cognitive development (socio-economic status, parental educational background and slum conditions). They selected 'comparable' schools instead of evaluating these factors at an individual level. Unfortunately, the school setting was not exploited to minimize the 'compliance effect' by supervised administration of the intervention. This cluster randomized trial did not account for the design effect in analyses. The trial appears to be underpowered to detect a change of 1.5 to 2 units in the cognitive scores. Finally, after deciding on a specified sample size it is unclear why the cognitive testing was restricted to a random sub-