should be done to further explore the impact of various foods on severity, clinical course and outcomes of chronic diseases such as asthma. Only then will there be some definitive evidence to support this controversial [20] quote from Hippocrates: *"Let food be thy medicine, and medicine be thy food."*

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Risk Factors Associated With MRSA Infection in Children

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The prevalence rates of methicillin-resistant *Staphylococcus aureus* (MRSA) infections has been linked to the quality of care, and are considered the benchmark for hospital infection control practices. As the therapeutic management of MRSA infections is very different from those due to methicillin-sensitive *Staphylococcus aureus* (MSSA), there is a need to study risk factors associated with acquisition of MRSA which will guide the empirical antibiotic choices. A delay in appropriate initial antibiotic choice can increase mortality and morbidity associated with these infections, especially in intensive care settings. An understanding of these factors would help to generate evidence not only to decide the choice of empirical

antibiotics but would also help in deciding strategies to control the transmission and spread of MRSA within the hospital. Most of the studies available on risk factors have been conducted in adult settings; similar studies in children are lacking.

Emergence of the fact that community acquired MRSA clones are different from healthcare-associated MRSA has disproved that hospitalization is the sole factor for MRSA, and also indicates that the risk factors are also present in the community which select out the resistant *Staphyloccocus aureus* strains.

In the study published in the present issue of *Indian Pediatrics*, Senthilkumar and colleagues [1] have studied the clinical predictors and risk factors associated with MRSA in children. They conclude that clinical characteristics of MRSA do not differ from MSSA infections. Further, they report that MRSA is more likely to be isolated from children with high total leucocyte count. In their study, 80% of the total MRSA isolates were community acquired MRSA. It would have been useful if the authors had provided more clear definitions of community acquired MRSA, healthcare-associated MRSA and healthcare-associated CO phenotype in their paper.

Overall, healthcare-associated MRSA still remains more prevalent, and is also resistant to more classes of antibiotics, therefore limiting the therapeutic options. Healthcare-associated MRSA is more commonly responsible for blood stream infections (BSI) and skin and soft tissue infections (SSTI). A study conducted in three teaching hospitals in North India [2] – to understand the risk factors associated with SSTI due to MRSA – reported an overall prevalence of MRSA causing SSTIs as 31.2%. A stepwise multiple logistic regression analysis adjusting for the differences among the hospitals indicated that factors like longer duration of hospital stay, presence of dermatosis, osteomyelitis and recent use of aminoglycosides and clindamycin were significantly associated with MRSA-SSTIs.

In a study evaluating risk factors for intensive care unit (ICU) acquired BSI due to MRSA [3], duration of hospitalization in ICU, simultaneous MRSA colonization in another patient in the ICU, prior use of antibiotics, and presence of central line were reported as independent risk factors. Duration of hospital stay has emerged as a common risk factor for acquiring not only MRSA but also multi-drug resistant (MDR) gram negative bacteria from most of the published literature. In turn, healthcare-associated infections determine the length of hospital stay [4]. The presence of skin lesions or infections or dermatosis can also be related to increased chances of colonization with MRSA, and more likelihood of prior antibiotic therapy. In a multicenter retrospective cohort study [5], a significant dose-effect relationship was seen between the prescription of antimicrobial drugs and MRSA infections.

There are studies that suggest a significant association of MRSA colonization as risk factor for subsequent infections with MRSA in hospitals as well as community. This is the reason that decolonization with chlorhexidine has been used as a strategy to prevent MRSA infections in hospital settings [6]. Other studies have also shown that nasal carriage is a risk factor in also in community acquired as well as healthcare-associated MRSA [7].

Finally, it is the local epidemiology and resistance profile of bacteria causing infections that is important while making the choice of empirical antibiotics. Therefore, studies on risk factors or prevalence of MRSA infections must have clear definitions for community acquired MRSA and healthcare-associated MRSA, and also look at the antimicrobial susceptibility profiles. Community acquired MRSA have more options of antibiotics, being susceptible to clindamycin, fluoroquinolones, cotrimoxazole and erythromycin, unlike healthcare-associated MRSA where vancomycin and linezolid are the limited choices [8]. It is also important to correctly identify MSSA from MRSA as beta-lactams have superior activity against *S. aureus* and therefore vancomycin should be avoided if MSSA is confirmed. The need to judiciously use vancomycin is not only to prevent emergence to vancomycin-intermediate *S. aureus* or vancomycin-resistant *S. aureus* but also to reduce the collateral damage in tertiary care settings where emergence of vancomycin-resistant enterococcus is linked to the use of vancomycin [9].

To be able to effectively control the spread of MRSA in any setting, it is imperative to know its risk factors and the modes of spread. There is now enough evidence that transmission by hands remains the most important method for acquisition and spread of MRSA in hospitals [10]. Strategies focusing on hand hygiene and use of standard precautions have shown a significant reduction in MRSA transmission [10]. This will go a long way in reducing the length of hospital stay, antibiotic use and the emergence of multidrug resistant bacteria.

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