Among top papers in pediatric infectious diseases, in 2014 there have been several interesting manuscripts on the emerging viral outbreaks, the pathogenetic role of respiratory pathogens and the impact of invasive bacteria on children’s health. Regarding emerging viral outbreak, Ebola has been one of the worst acute public health problem in the last 50 years and several pediatric cases have been described in details. Another important issue was represented by Enterovirus D-68, that has been associated with respiratory failure and acute flaccid paralysis in USA and Europe during the summer and fall 2014. In addition, measles has continued to represent a common disease for which elimination has not been reached and vaccination gaps appear clear. Regarding the pathogenetic role of respiratory pathogens, new data have been collected on influenza viruses and their mechanism of action with important implications for the development of a universal influenza vaccine, respiratory syncytial virus and the role of its different genotypes, with findings relevant for its prevention, and rhinovirus, for which new findings have shown that it causes mainly asymptomatic infection or diseases with a mild clinical presentation with viral shedding limited in time. Finally, new diagnostic methods have permitted to better quantify the importance of Streptococcus pneumoniae and different pneumococcal serotypes in pediatric diseases, its interaction with Staphylococcus aureus, the role of methicillin-resistant S. aureus and the role of Neisseria meningitidis.