Background: Sub-Saharan Africa countries experience among the highest infant mortality and under-5 mortality rates in the world. While bacterial infections are thought to cause many of these deaths, little microbiological data have been available. In order to identify these bacterial pathogens and investigate the outcome of these cases, we have had ongoing hospital-based surveillance at the principal pediatric hospital in Bamako.

Methods: Children age 0-15 years with fever ≥ 39°C or syndromes compatible with invasive bacterial disease (e.g. meningitis, pneumonia) and admitted to Hôpital Gabriel Touré were eligible. Blood and relevant body fluid (e.g. cerebrospinal fluid (CSF)) were cultured. Bacteria were identified by standard microbiologic techniques. Enrolled children were followed until the end of the hospitalization.

Results: Among the 11671 children admitted to HG T from June 2002 to May 2005, 6087 were eligible and 5514 (90.6%) were enrolled. During the course of the hospitalization 573 children died, representing at least 5% of those admitted and 10% of those enrolled. There was an increased risk of death among those < 1 year old (p < 0.001) and those from whom a pathogen was isolated (14.9% vs 9.0%, p < 0.001). This risk was decreased among children who had been treated with antibiotics prior to admission compared to those who had not, regardless of the presence of a pathogen (p < 0.001). The highest case fatality rates were observed among children infected with Gram negative bacilli (other than Salmonella spp.) (23.6%; 36/138), Streptococcus pneumoniae (SP, 19.4%; 73/377), non-typhoidal Salmonella spp (13.4%; 27/205, and Haemophilus influenzae b (Hib, 11.4%; 43/335). Nonetheless, SP and Hib contributed the highest number of deaths.

Conclusions: Invasive bacterial infections are associated with high case fatality among Malian children even after hospitalization. Vaccination and other strategies aimed at prevention and early detection and treatment are needed, particularly targeting young infants.