A. baumannii compromised by the selection and spread of colistin-resistant gen. sp. 13BJ yielded MICs included both susceptible and resistant strains all eight strains of susceptibility testing.

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Reduction in erythromycin resistance in invasive pneumococci from young children in England and Wales

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Sir, Streptococcus pneumoniae causes a variety of infections, ranging from acute otitis media to severe invasive infections such as bacteraemia and meningitis, in both children and adults.1 During the 1990s in England and Wales, penicillin resistance in S. pneumoniae increased from <1% in 1990 to 6.7% in 2000, but decreased thereafter, with yearly rates fluctuating between 2% and 4%. In contrast, erythromycin resistance increased from 5% in 1990 to 11%–14% across the whole population from 1997 to 2005.2,3 Erythromycin resistance in pneumococci isolated from blood culture in the UK has been strongly associated with serotype 14.4,5 Therefore there was an expectation that a decrease in erythromycin resistance would follow the introduction of the pneumococcal heptavalent conjugate vaccine (PCV7), which contains the serotype 14 antigen (along with those of 4, 6B, 9V, 18C, 19F and 23F). This vaccine was introduced into the UK routine childhood immunization schedule in September 2006, with children receiving vaccine doses at 2, 4 and 13 months. In addition, there was a catch-up campaign aimed at vaccinating children under 2 years of age who had already received their primary immunizations that did not contain PCV7.

To investigate the effects of immunization with PCV7, data on pneumococcal bacteraemia in England and Wales, along with the erythromycin susceptibility test results, spanning the time period from 2000 to the first two quarters of 2009, were extracted from the HPA database (LabBase2).6 Data were stratified into two groups, comprising patients aged 2 months to <2 years, and those aged >2 years, to reflect the immunization schedule. Regression analysis was performed using Stata 10.1 (Stata Corp. LP, College Station, TX, USA) with outcomes interpreted as odds ratios (ORs).

A total of 31212 reports of S. pneumoniae with erythromycin susceptibility data were obtained for the whole time period, comprising 2078 results for patients aged 2 months to <2 years and 29134 results for older patients (median age=67 years). The proportions of pneumococci from blood cultures of patients in the two age groups that were resistant to erythromycin are shown in Figure 1. Prior to the introduction of PCV7,
erythromycin resistance in isolates from children aged 2 months to <2 years fluctuated within the range of 20%–30%, with no significant overall change in trend [OR = 1.02; 95% confidence interval (CI) = 0.97–1.08]. In contrast, the resistance rates in older patients ranged from 12% to 14% between 2000 and 2004, with a gradual decrease from 2004 onwards. This decrease followed the national introduction in 2003 of a 23-valent pneumococcal polysaccharide vaccine (23vPPV) recommended for use in people aged ≥65 years and for younger patients (>2 years old) at high risk of pneumococcal infection. This vaccination programme was an expansion of the previous policy that was implemented in England in 1992, where only specific risk groups were included.  

Following the introduction of PCV7 in late 2006, there was a significant reduction in erythromycin resistance in children aged 2 months to <2 years, from 24% in 2006 to 3% in 2009 (OR = 0.42; 95% CI = 0.30–0.58) (Figure 1). Due to the decreasing level of resistance already evident in isolates from older patients prior to 2006, it is difficult to assess the extent of any potential herd immunity in these patients resulting from the use of PCV7 in those aged <2 years.

This study documents the steep fall in erythromycin resistance amongst invasive pneumococci from children aged <2 years after the introduction of PCV7. Clearly, further surveillance is required to assess future trends in resistance amongst pneumococci isolated from patients of various ages, and to monitor potential re-emergence of erythromycin resistance, possibly due to increased spread of pneumococcal serotypes currently not included in the vaccine.

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**References**


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**Breakthrough bacteraemia with a susceptible Enterococcus faecalis during tigecycline monotherapy**

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Sir,

Despite its efficacy in abdominal1 and soft tissue infections2 and community-acquired pneumonia,3 there have been concerns

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**Figure 1.** Percentage of S. pneumoniae isolates resistant to erythromycin in children aged 2 months to <2 years and in older patients. Arrow, introduction of PCV7; open squares, 2 months to <2 years; open triangles, ≥2 years.