

Pneumonia in children admitted to Patan Hospital, Nepal 2005–2014: differing clinical criteria and the surveyed prevalence of pneumonia

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INTRODUCTION

- Standardised definitions of pneumonia are required for clinical care, comparisons of pneumonia incidence across settings, and other reasons including assessment of vaccine impact¹⁻⁴ (Table 1).
- We describe the prevalence, age distribution of pneumonia as defined by WHO (2014) criteria in children consecutively admitted with suspected invasive bacterial disease (IBD) to Patan Hospital, Kathmandu, Nepal.
- We also present blood culture data for these case series.
- Routine infant immunisation against *Haemophilus influenzae* type b was introduced to Nepal in 2009.

METHODS

- During 2005–6 and July 2009, all children with suspected invasive bacterial disease (IBD), including pneumonia, meningitis and sepsis, were prospectively enrolled.
- Clinical information at admission was recorded, including specific questions on criteria for pneumonia and a discretionary clinical admission diagnosis made by admitting paediatricians.
- Blood was sampled and cultured from all children using BACTEC[®] paediatric culture bottles (and the automated BACTEC[®] culture system since 2009).
- Definitions:

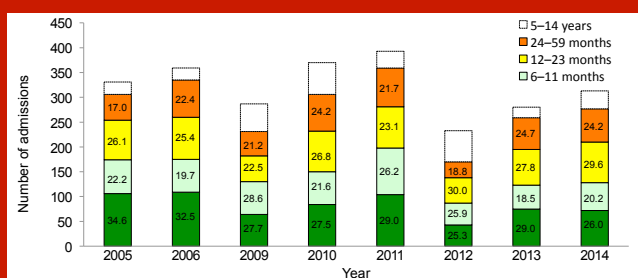
Definition	Age	Details
Pneumonia (WHO 2008)	≥2m and <5y	Cough/difficulty breathing with fast breathing (not chest indrawing)
Severe pneumonia (WHO 2008)	≥2m and <5y	Cough/difficulty breathing with chest indrawing (regardless of fast breathing)
Pneumonia (WHO 2014)	≥2m and <5y	Cough/difficulty breathing with fast breathing and/or chest indrawing
All patients	≥2m and <14 y	Discretionary clinician diagnosis of pneumonia on admission

RESULTS

- Exactly 10 000 children aged 0–14 years of age were admitted with suspected IBD during the study periods, of whom 426 (4.3%) were bacteraemic for a pathogen.
- 5404 (54.0%) children admitted with suspected IBD were aged ≥60 days and <5 years (young children).
- Of young children, 2249 (41.6%) met WHO (2014) criteria for pneumonia (Figure 1).
- Of these 2249 children, 54 (2.4%) were bacteraemic for a pathogen (Figure 2).

FIGURE 1

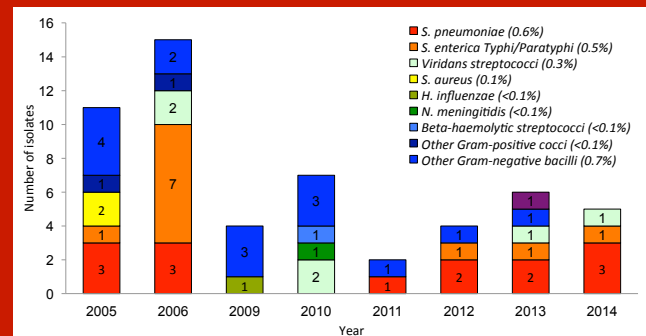
Number of admissions, and percentage for age groups of young children meeting WHO (2014) criteria for pneumonia*, by year



*Children 5–14 years of age depicted if they meet WHO (2014) criteria for pneumonia in children 1–5 years of age

FIGURE 2

Organisms cultured from blood in children meeting WHO (2014) criteria for pneumonia by year (n = 2249)



- Of 2249 young children who met WHO (2014) criteria for pneumonia, 1082 (48.1%) had a discretionary admitting clinician diagnosis of pneumonia (Table 1).
- 47/2222 (2.1%) of cases of young children who met WHO criteria for (and on whom outcome data was available) died.

TABLE 1

Comparison of diagnosis of WHO (2014) pneumonia and discretionary admitting clinician diagnosis of pneumonia

		Young children meeting WHO (2014) criteria for pneumonia		Total
		No	Yes	
Clinician-defined clinical pneumonia in young children	No	2777 (88.0%)	1167 (51.9%)	3944
	Yes	378 (12.0%)	1082 (48.1%)	1460
	Total	3155 (100%)	2249 (100%)	5404

CONCLUSION

- Pneumonia is the most common cause of suspected IBD in our cohort, although the prevalence in young children varies considerably between admitting clinician discretionary diagnoses and those meeting WHO clinical criteria for pneumonia.
- Mortality was ~2% of children with WHO-defined pneumonia.
- As in similar South Asian cohorts, the most common pathogen cultured was *S. pneumoniae* from children with pneumonia⁷.
- The importance of *S. pneumoniae* as a cause of pneumonia in these children is likely to be underestimated by blood culture alone⁸.

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