

Supplementary Table 1: Number of children who had pre-admission reviews, pre-admission review by a GP, and admission to hospital on the same day as their first pre-admission review

	Pre-admission review ^a	1 st pre-admission review by GP ^b	Same day admission
Age group			
<3 months	126/219 (58%)	83/125 (66%)	87/124 (70%)
3-23 months	58/102 (57%)	31/51 (61%)	33/53 (62%)
≥2 years	36/52 (69%)	20/33 (61%)	17/34 (50%)
<i>p-value</i>	0.268	0.703	0.083
Diagnosis			
Meningitis	39/68 (57%)	31/37 (84%)	26/39 (67%)
Non-meningitis	181/305 (59%)	103/172 (60%)	111/172 (65%)
<i>p-value</i>	0.763	0.006	0.801
1st pre-admission review^c			
by GP	–	–	75/129 (58%)
by non-GP	–	–	53/72 (74%)
<i>p-value</i>	–	–	0.029
1st pre-admission review by GP^d			
Meningitis	–	–	22/31 (71%)
Non-meningitis	–	–	53/98 (54%)
<i>p-value</i>	–	–	0.097

^aPre-admission review status unknown for 5 children aged <3 months, 7 aged 3-23 months and 3 aged ≥2 years; and in 2 with meningitis and 13 without meningitis;

^cIdentity of first pre-admission reviewer unknown for 1 child aged <3 months, 7 aged 3-23 months and 3 aged ≥2 years; and in 2 with meningitis and 9 without meningitis

^eRelative day of admission compared to pre-admission review unknown for 10 cases;

^dDescription of pre-admission reviewer and/or relative day of admission compared to pre-admission review unknown for 19 cases; ^dRelative day of admission unknown for 5 cases of children who had first pre-admission review by GP

Supplementary Table 2: Median time to lumbar puncture by age group (p values for comparison of mean time to LP with mean time for children age<3 months)

	Age		
	<3 months	3-23 months	≥2 years
All children			
Time in hours (n=219)	3.0	6.2 (p<0.001)	20.3 (p<0.001)
Time in days (n=386)	0	0 (p=0.004)	1 (p<0.001)
Excluding cases where CSF processing time was used for LP time			
Time in hours (n=91)	2.7	3.5 (p=0.100)	18.3 (p<0.001)
Excluding children who had LP intentionally delayed			
Time in hours (n=158)	2.5	3.6 (p=0.010)	27.6 (p <0.001)
Time in days (n=232)	0	0 (p=0.007)	1 (p<0.001)

Supplementary Table 3: Number and percentage of children who had cerebrospinal fluid (CSF) PCR performed for different pathogens, by aetiology of meningitis

Pathogen	Non-meningitis (n=318)	All meningitis (n=70)	Bacterial meningitis (n=13)	Viral meningitis (n=26)	Meningitis of unknown cause (n=29)
Bacterial CSF PCR					
<i>N. meningitidis</i>	3 (1%)	5 (7%)	3 (23%)	0 (0%)	<u>2 (7%)</u>
<i>S. pneumoniae</i>	3 (1%)	6 (9%)	3 (23%)	0 (0%)	<u>3 (10%)</u>
<i>Streptococcus agalactiae</i> (Group B Streptococcus)	0 (0%)	4 (6%)	2 (15%)	0 (0%)	2 (7%)
Viral CSF PCR					
Enterovirus	119 (37%)	51 (73%)	5 (38%)	23 (88%)	<u>22 (76%)</u>
Human parechovirus	58 (18%)	11 (16%)	2 (15%)	7 (27%)	<u>2 (7%)*</u>
Herpes simplex virus	122 (38%)	48 (69%)	5 (38%)	21 (81%)	21 (72%)
Varicella zoster virus	58 (58%)	41 (59%)	3 (23%)	16 (62%)	21 (72%)
Cytomegalovirus	11 (3%)	1 (1%)	0 (0%)	1 (4%)	0 (0%)
Epstein-Barr Virus	2 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Human herpesvirus-6	42 (13%)	6 (9%)	1 (8%)	5 (19%)	0 (0%)
Human herpesvirus-7	2 (1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Influenza virus	3 (1%)	1(1%)	0 (0%)	0 (0%)	1 (3%)
Adenovirus	20 (6%)	4(6%)	1 (8%)	2 (8%)	1 (3%)
Mumps virus	4 (1%)	1 (1%)	1 (8%)	0 (0%)	0 (0%)
No CSF PCRs done	87 (27%)	9 (13%)	2 (15%)	0 (0%)	6 (21%)
PCR done – pathogen not specified	15 (5%)	2 (3%)^	1 (8%)	1 (4%)^	0 (0%)
Unknown if PCR done	88 (28%)	0 (0%)	4 (31%)	0 (0%)	1 (3%)

*13/29 with meningitis of unknown cause were <3 months; 1/13 (8%) of these had PCR for human parechovirus; ^1 child with viral meningitis had CSF PCR for human parechovirus, and no data recorded on whether other specific CSF PCRs were requested

Supplementary Table 4: Median time to antibiotic administration for different patient groups, with p values for comparison of mean times

Patient Group	Median time to antibiotics (Hours)	Median time to antibiotics (Days)
Age <3 months	3.0	0
Age 2-23 months	3.8 (p=0.226) ^a	0 (p=0.789) ^a
Age ≥2 years	3.5 (p=0.338) ^a	0 (p=0.280) ^a
Children with meningitis	3.0	0
Children without meningitis	3.3 (p=0.511) ^b	0 (p=0.561) ^b

^a Compared with children age <3 months; ^b compared with children with meningitis

Supplementary Table 5: Frequency of different initial antibiotic combinations, including those recommended by UK national guidelines* (highlighted in italics for each age group), and subsequent use of such combinations.

	Used as initial antibiotic therapy, n (%)	Subsequent switch to recommended antibiotic(s), n (%)
Age <1 month (n=107)		
<i>Ceftriaxone/Cefotaxime + amoxicillin</i>	84 (79%)	N/A
Ceftriaxone/Cefotaxime	9 (8%)	2 (2%)
Other ^a	12 (11%)	3 (3%)
Unknown	2 (2%)	1 (1%)
Age 1 to <3 months (n=117)		
<i>Ceftriaxone/Cefotaxime + amoxicillin</i>	84 (72%)	N/A
Ceftriaxone/Cefotaxime ^b	25 (21%)	1 (1%)
Other	6 (5%)	4 (3%)
Unknown	2 (2%)	0 (0%)
Age ≥3 months (n=164)		
<i>Ceftriaxone/Cefotaxime</i>	143 (87%)	N/A
Other	18 (11%)	10 (6%)
Unknown	3 (2%)	0 (0%)

*UK guidelines on paediatric meningitis recommend ceftriaxone for age ≥3months, and cefotaxime with amoxicillin for age <3 months.[13] More recent guidelines on sepsis recommend the same, but cefotaxime is only indicated for neonates ≤40 weeks corrected gestational age.[14]

^aThis group included 2 neonates aged <3 days treated with benzylpenicillin and gentamicin as per UK national guidelines on neonatal infection.[40]

^bGiven the low rate of *Listeria* infection in children ≥1 month of age, treatment with an aminopenicillin may be unnecessary in this age group.[13]