

FEBRILE INFANT REGIONAL EVALUATION (FIRE): CLINICAL OUTCOMES OF FEBRILE INFANTS #1458

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Introduction

- Febrile infants commonly present to acute paediatrics and emergency departments
- 10-20% will have a serious bacterial infection (SBI).^{1,2,3}
- Differentiating from self-limiting illness can be challenging,
- Delayed diagnosis of SBI can lead to morbidity
- Interventions have financial costs, cause patient and caregiver discomfort, and may lead to antimicrobial over-use and resistance.

Methods

- Retrospective multicentre study across 21 hospitals within the London REACH Network.⁴
- Inclusion
 - Infants ≤90 days of age
 - fever (≥38.0°C) (or reported fever),
 - 1st April 2021-31st March 2022.
- Definitions
 - Bacteraemia: isolate from blood culture (BC), (excluding contaminants e.g. CONS)
 - Meningitis: isolate from cerebrospinal fluid culture (CSF) (excluding contaminants)
 - UTI: >100,000 CFU/ml of single pathogenic organism from urine culture (U-MCS)
 - Invasive bacterial infection (IBI): bacteraemia or meningitis.
 - SBI: IBI + UTI

Results	Whole cohort	IBI	No IBI	P value	SBI	No SBI	P value
Number (% of whole cohort)	2008 (100%)	44 (2.2%)	1964 (97.8%)	n/a	173 (8.6%)	1835 (91.4%)	n/a
Age in days Median [IQR]	50 [30–66]	22 [17–41]	50 [30–67]	<0.001	44 [24–65]	51 [30–67]	0.05
Male (%)	58.5	75.0	58.1	0.037	68.2	57.6	0.009
Appears unwell (%)	35.8	52.3	35.4	0.031	42.2	35.1	0.077
Heart rate Median [IQR]	161 [149–177]	179 [162–191]	160 [149–176]	<0.001	166 [152–182]	160 [149–176]	0.004
CRP Median [IQR]	5 [1–19]	44 [16–102]	5 [1–18]	<0.001	18 [4–56]	5 [1–16]	<0.001
WCC Abnormal (%)	29.3	47.6	28.7	0.013	38.0	28.1	0.011
NPA Positive (%)	22.7	9.1	23.0	<0.001	20.8	22.9	0.002
Inpatient admission (%)	61.1	95.5	60.3	<0.001	90.8	58.3	<0.001
PICU (%)	0.2	4.5	0.1	<0.001	1.2	0.1	0.039
Hospital stay >72h (%)	17.2	63.6	16.1	<0.001	41.0	14.9	<0.001

Culture site	Pathogenic Organisms (n)
Blood culture 1235/2008 Bacteraemia (44) <i>Contaminant (75)</i>	E. Coli (23), GBS (8), S. aureus (6), Klebsiella (2), Citrobacter (1), Moraxella (1), Enterobacter (1), Enterococcus (1)
CSF culture 808/2008 Meningitis (3) <i>Contaminant (8)</i>	GBS (3)
U-MCS 1071/2008 UTI (137) <i>Contaminant (203)</i>	E. Coli (81), Klebsiella (25), Enterococcus (22), Enterobacter (5), Pseudomonas (2), Proteus (1), Other (1)

Discussion

- Low rates of SBI (8.6%) and IBI (2.2%), in keeping with recent studies,⁵ and high rates of contaminants, support consideration of observation without intervention for low-risk, well-appearing infants
- Reporting clinically relevant outcome measures, e.g. length of stay / PERFORM phenotype,⁶ may have additional benefit to culture positive infection

1. Mintegi et al., 2014, PMID: 23851127; 2. Kuppermann et al., 2019, PMID: 30776077; 3. McCaig & Burt, 2004; 4. Haberman et al, 2025, 10.1136/bmjpo-2024-002970; 5. Umana et al 2024, <https://doi.org/10.1016/j.eclim.2024.102961>; 6 Nijman et al, 2021, <https://doi.org/10.3389/fped.2021.688272>

