**Supplementary Appendix**

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| **Supplementary Table S1:** Clinical signs of possible serious bacterial infection (pSBI) | |
| **WHO YICSSG Study criteria for PSBI**1 | **Modified criteria for PSBI used in this study** |
| History of convulsion | History of convulsion or observed convulsion |
| Fast breathing (respiratory rate ≥60/min) | Fast breathing (respiratory rate ≥60/min on repeat count) only if > 3 days postnatal age2 |
| Severe chest in-drawing | Severe chest in-drawing |
| Axillary temperature >37.5°C | Axillary temperature ≥38°C (confirmed by a second reading) |
| Axillary temperature <35.5°C | Axillary temperature ≤35.5°C (confirmed by a second reading) |
| Lethargic or less than normal movement | Movement only when stimulated (lethargy) or no movement at all (unconscious) |
| History of feeding problems | History of not feeding well as reported by mother, confirmed by feeding assessment |
| 1 Young Infants Clinical Signs Study Group. Clinical signs that predict severe illness in children under age 2 months: a multicentre study. The Lancet **2008**; 371(9607): 135-42.  2 Because fast breathing has low specificity as a single sign [\_ENREF\_9](#_ENREF_9) and is also associated with non-infectious syndromes in the newborn (respiratory distress syndrome and transient tachypnoea of the newborn) particularly in first three days after birth, we excluded newborns with fast breathing as the only sign of pSBI if they were aged 3 days or less. | |

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| **Supplementary Table S2:** Antibiotic treatment protocol for serious neonatal infections in Gambian health facilities | | | | | |
| **Antibiotic** | **Dose** | **Frequency** | | **Route** | **Duration** |
|  |  | **< 7 days of age** | **≥ 7 days of age** |  |  |
| **I. Sepsis or pneumonia** | | | | | |
| Ampicillin | 50mg/kg/dose | 12 hourly | 8 hourly | IV or IM | 7 – 10 days |
| Cloxacillin | 50mg/kg/dose | 12 hourly | 8 hourly | IV | 7 – 10 days |
| Gentamicin | 2.5mg/kg/dose | 12 hourly | 8 hourly | IV or IM | 7 – 10 days |
| Ceftriaxone | 100mg/kg/dose | daily | daily | IV | 7 – 10 days |
| **II. Meningitis** | | | | | |
| Ampicillin | 100mg/kg/dose | 12 hourly | 8 hourly | IV | 21 days |
| Gentamicin | 2.5mg/kg/dose | 12 hourly | 8 hourly | IV | 21 days |
| Ceftriaxone | 100mg/kg/dose | daily | daily | IV | 21 days |
| IV= intravenous; IM=intramuscular | | | | | |

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| **Supplementary Table S3:** Clinical significance of bacteria detected in neonatal blood culture | | |
| **Clinically significant organisms** |  | **Clinically non-significant organisms** |
| * *Acinetobacter* species * *Burkholderia* species * *Citrobacter* species * *Enterobacter* species * *Enterococcus* species * *Escherichia coli* * Group A Streptococcus * Group B Streptococcus * Group D Streptococcus * *Klebsiella pneumoniae* * *Proteus mirabilis* * *Pseudomonas aeruginosa* * *Salmonella species* * *Serratia marcescens* * *Staphylococcus aureus* * *Streptococcus pneumoniae* |  | * *Bacillus* species * Coagulase negative staphylococci * Diphtheroids * *Micrococcus* species * *Propionibacterium* species * *Viridans streptococcus* |

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| **Supplementary Table S4:** Antibiotics used in antimicrobial sensitivity testing. | |
| **Pathogens** | **Antibiotic panel used for antimicrobial sensitivity testing** |
| Enterobacterales (*Escherichia coli, Klebsiella species, Proteus, Citrobacter*) | Amoxicillin-Clavulanate, Ampicillin, Cefotaxime, Cefoxitin, Ceftazidime, Ceftriaxone, Cefuroxime, Chloramphenicol, Ciprofloxacin, Gentamicin, Sulfamethoxazole-Trimethoprim and Tetracycline |
| *Staphylococcus aureus* | Penicillin, Cefoxitin, Chloramphenicol, Ciprofloxacin, Erythromycin, Gentamicin, , Sulfamethoxazole-Trimethoprim and Tetracycline. |
| *Pseudomonas aeruginosa* | Ceftazidime, Ciprofloxacin Gentamicin, Polymyxin B |
| *Acinetobacter baumanii,* | Chloramphenicol, Ceftazidime and Sulfamethoxazole-Trimethoprim. |
| Beta-haemolytic Streptococci, | Tetracycline, Chloramphenicol, Erythromycin, Penicillin, Ampicillin and Vancomycin. |

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| **Supplementary Table S5:** Isolate accessions | | | | |
| **Accession** | **Bioproject\_accession** | **Sample\_name** | **Study ID** | **Pathogen** |
| SRR14311768 | PRJNA723854 | 59\_S56 |  | *Staphylococcus aureus* |
| SRR14311767 | PRJNA723854 | 96\_S4 |  | *Staphylococcus aureus* |
| SRR14311756 | PRJNA723854 | 3928-SA\_S22 |  | *Staphylococcus aureus* |
| SRR14311753 | PRJNA723854 | 3927-SA\_S23 |  | *Staphylococcus aureus* |
| SRR14311752 | PRJNA723854 | 4383-SA\_S25 |  | *Staphylococcus aureus* |
| SRR14311751 | PRJNA723854 | 4384-SA\_S26 |  | *Staphylococcus aureus* |
| SRR14311750 | PRJNA723854 | 4450-SA\_S27 |  | *Staphylococcus aureus* |
| SRR14311749 | PRJNA723854 | 4454-SA\_S29 |  | *Staphylococcus aureus* |
| SRR14311748 | PRJNA723854 | 5047-16-SA\_S32 |  | *Staphylococcus aureus* |
| SRR14311747 | PRJNA723854 | 5048-SA\_S33 |  | *Staphylococcus aureus* |
| SRR14311766 | PRJNA723854 | 5627-SA\_S34 |  | *Staphylococcus aureus* |
| SRR14311765 | PRJNA723854 | 5629-SA\_S35 |  | *Staphylococcus aureus* |
| SRR14311764 | PRJNA723854 | 6040-K\_S17 |  | Klebsiella |
| SRR14311763 | PRJNA723854 | 6042-K\_S18 |  | Klebsiella |
| SRR14311762 | PRJNA723854 | 6034-K\_S13 |  | Klebsiella |
| SRR14311761 | PRJNA723854 | 6037-K\_S15 |  | Klebsiella |
| SRR14311760 | PRJNA723854 | 1472-EC\_S8 |  | *Escherichia coli* |
| SRR14311759 | PRJNA723854 | 1465-EC\_S1 |  | *Escherichia coli* |
| SRR14311758 | PRJNA723854 | 4736-EC\_S9 |  | *Escherichia coli* |
| SRR14311757 | PRJNA723854 | 4755-EC\_S11 |  | *Escherichia coli* |
| SRR14311755 | PRJNA723854 | 0023-17-ENT\_S20 |  | Enterococcus |
| SRR14311754 | PRJNA723854 | 0028-ENT\_S6 |  | Enterococcus |

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| **Supplementary Table S6**: Antibiotic resistance patterns for clinically significant neonatal bloodstream isolates | | | | | | | |
|  | ***Staphylococcus aureus*** | ***Klebsiella***  ***species*** | ***Burkholderia cepacia*** | ***Pseudomonas species*** | ***Escherichia***  ***coli*** | ***Enterococcus faecalis*** | ***Acinetobacter baumanii*** |
| Antibiotic class | No. Resistant (%) | No. Resistant (%) | No. Resistant (%) | No. Resistant (%) | No. Resistant (%) | No. Resistant (%) | No. Resistant (%) |
| ***Penicillins*** |  | | | | | | |
| Ampicillin | NT | NT | 6/6 (100%) | NT | 2/2 (100%) | 0/3 (0%) | 2/2 (100%) |
| Amoxicillin/clavulanic acid | NT | NT | 4/5 (80%) | NT | 1/2 (50%) | NT | 1/2 (50%) |
| Penicillin | 12/13 (92%) | NT | 1/1 (100%) | NT | NT | 2/3 (67%) | NT |
| ***Cephalosporins*** |  | | | | | | |
| Cefuroxime | NT | 8/8 (100%) | 5/5 (100%) | 1/1 (100%) | 1/2 (50%) | NT | 0/1 (0%) |
| Cefoxitin | 0/12 (0%) | 0/5 (0%) | 0/1 (0%) | NT | NT | NT | NT |
| Ceftriaxone | 0/2 (0%) | 2/3 (67%) | 1/1 (100%) | 0/2 (0%) | NT | NT | 0/1 (0%) |
| Cefotaxime | 0/1 (0%) | 7/8 (88%) | 3/4 (75%) | 0/1 (0%) | 1/2 (50%) | NT | 0/1 (0%) |
| Ceftazidime | NT | 8/9 (89%) | 0/7 (0%) | 0/5 (0%) | 1/2 (50%) | NT | 0/2 (0%) |
| ***Aminoglycoside*** |  | | | | |  |  |
| Gentamicin | 0/11 (0%) | 8/9 (89%) | 1/8 (13%) | 1/6 (17%) | 2/2 (100%) | NT | 1/2 (50%) |
| ***Fluoroquinolone*** |  | | | | |  |  |
| Ciprofloxacin | 0/12 (0%) | 5/9 (56%) | 0/9 (0%) | 0/6 (0%) | 1/2 (50%) | 0/3 (0%) | 0/2 (0%) |
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| **Supplementary Table S7:** Distribution of carriage status among mothers of newborns with pSBI | |
| **Organism a** | **(n/202)** | |
| Acinetobacter species | 4 (2.0%) | |
| Coagulase-negative staphylococci | 4 (2.0%) | |
| Enterobacter species | 8 (4.0%) | |
| Enterococcus | 72 (35.6%) | |
| *Escherichia coli* | 138 (68.3%) | |
| *Escherichia fergusonni* | 1 (0.5%) | |
| Group B Streptococcus | 23 (11.4%) | |
| *Klebsiella pneumoniae* | 64 (31.7%) | |
| Kluyvera species | 1 (0.5%) | |
| Other Staphylococcal species | 1 (0.5%) | |
| Streptococcus species (other than GBS) | 10 (5.0%) | |
| Proteus species | 6 (3.0%) | |
| Pseudomonas species | 8 (4.0%) | |
| *Raoultella ornithinolytica* | 3 (1.5%) | |
| *Staphylococcus aureus* | 50 (24.8%) | |
| Unspecified coliforms | 18 (8.9%) | |

## **References**

1. Centers for Disease Control and Prevention. Prevention of Perinatal Group B Streptococcal Disease Revised Guidelines from CDC. MMWR;59 (No. RR-10):1-36.