

## UMP. 032

**Antibiotic Resistance (ABR) in Neonates with Suspected Sepsis admitted to a Médecins Sans Frontières (MSF) supported Medium Care Unit in Quetta, Pakistan.**

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**Background:** Neonatal Sepsis is a major cause of infant death, especially if associated with ABR. Choice of empirical antibiotics is particularly challenging without access to culture/DST, as in most resource limited settings. MSF care included blood cultures (BCs) since 2015. Here we describe the characteristics of babies, etiologies, ABR, treatment and outcomes.

**Methods & Materials:** BC was collected and antibiotics immediately started upon suspicion of sepsis, as per MSF guidelines. ABR testing was done with disc diffusion test. Proportions were compared with chi-squared test; effect of main antibiotic regimens on fatality rates (CFR) was assessed using multivariable logistic regression models (likelihood ratio test).

**Results:** In total 286 babies were admitted (Nov15-Jul17): 93 (32.5%) female; median age: 2 days (IQR:0–6d, range:0–30d), median gestational age: 37 weeks (IQR:36–38w, range:30–42w); median weight: 2.3Kgs (IQR:1.8–3.0Kgs, range:1–4.4Kgs), vaginal delivery: 83.9%; CPAP: 28.6%. Early onset sepsis (EOS) was suspected in 184 (64.3%) and late onset (LOS) in 102 (35.7%); 96 died (CFR: 34.4%; EOS:38.1%, LOS:26.7%;  $p = 0.05$ ).

Ampicillin + Gentamycin was the most common regimen started empirically (238, 83.2%), followed by Cefotaxime + Amikacin (24, 8.4%); 86 (30.1%) BCs were positive (CFR: positive 41.7% versus negative 30.8%,  $p = 0.07$ ), with a total of 103 isolates: 100 (97.1%) bacterial (gram-positive: 61, 61%; gram-negative: 41, 41%) and 3 (2.3%) fungi (*Candida* spp); 46.6% were potential skin contaminants (mostly *Staphylococcus* coagulase-negative). The most frequent gram-positive pathogen was *Enterococcus* sp (9, 8.4%; CFR:44.4%), 37.5% susceptible to Ampicillin (Vancomycin = 100%); as for gram-negatives: *Burkholderia cepacia* (11, 10.7%; CFR:45.5%), 80%, 90.9% and 100% susceptible to Cotrimoxazol, Ceftazidime and Meropenem, respectively; *Klebsiella pneumoniae* (10, 9.6%; CFR:22.2%) and *Escherichia coli* (8, 7.9%; CFR:50%). For all 21 isolates of *Enterobacteriaceae* (53.8% of all gram-negatives and 20.4% of all isolates; includes *Enterobacter* sp and *Proteus mirabilis*; CFR:47.6%) susceptibility was: Ceftriaxone:12.5%; Gentamycin:33.3%; Amikacin:73.6%; Imipenem:82.4%. After controlling for gestational age, CPAP and c-section, empirical Cefotaxime + Amikacin was associated with 80% reduction in the odds of death over Ampicillin + Gentamycin (OR:0.20, 95%CI:0.04–0.86,  $p = 0.009$ ;  $N = 267$ ).

**Conclusion:** Culture/DST allows the design of more effective antibiotic regimens for Neonatal Sepsis which, coupled with

intensive supportive treatment, prevents fatalities, decreases infant mortality and may prevent escalation of ABR if coupled with Antibiotic Stewardship and Infection Prevention and Control.

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