

BENEFITS OF A COSTLY AND WORK INTENSIVE MICROBIOLOGIC SURVEILLANCE IN A COHORT OF VERY LOW BIRTH WEIGHT INFANTS (VLBWI, <1500G).W. Lindner¹, A. Essig², H. Hummler¹, H. Von Baum²¹Pediatrics, University of Ulm, Ulm, Germany ; ²Medical Microbiology, University of Ulm, Ulm, Germany

Objectives. To study the postnatal bacterial colonisation in VLBWI, define the endemic level of selected, clinical relevant pathogens in this population and assess the impact on antibiotic and hygienic management.

Methods. Setting: Level III neonatal intensive care unit, University of Ulm. Study period: July 2012 to June 2013. This cohort study was performed in all inborn VLBWI from birth until the weight of 1800 g. Bacterial colonisation of the respiratory and the intestinal tract was screened weekly. Identification and antibiotic susceptibility testing was performed for *Staphylococcus aureus*, Enterobacteriaceae, Pseudomonas spp. and other gramnegative nonfermenters (= Possible Nosocomial Pathogens). Nosocomial infections and antibiotic treatment were documented.

Results. During 4489 surveillance days 839 respiratory and 661 gastrointestinal swabs were taken from 98 infants [gestational age: 28.3 (22.3-34.0) wks, birth weight 980 (330-1490) g]. PNP were detected on day 7(1-51) in the respiratory samples and day 19 (2-53) in the GI tract. On the average 2 (0-7) PNP per newborn could be isolated. *Staphylococcus aureus* became predominant earlier than gram negative pathogens [7(1-61) vs 22(2-76) days]. 82/98 infants were colonized with gram negative PNP. In 31 (38%) of these infants at least two different species were present. The colonization persisted in most cases until the end of the surveillance. 8 species represented 88% of all PNP. The endemic level of these species varied over the study period (Fig.1).

In 12/98 infants multi-resistant pathogens were detected by screening: methicillin resistant *Staphylococcus aureus*, n=3; extended-spectrum beta-lactamase-*E. coli*, n=2; cephalosporin resistant Enterobacteriaceae, n=7. Risk factors were lower gestational age (p=0.003) and birth weight (p=0.033). Appropriate hygiene measures were implemented and no transmission of methicillin resistant *Staphylococcus aureus* and extended-spectrum beta-lactamase-*E. coli* occurred. Antibiotic therapy for suspected congenital or nosocomial infection was given in 67/98 and 37/98 infants respectively. In 4/8 infants with blood culture positive sepsis the causing pathogen was identical with the PNP detected by screening and initial antibiotic therapy had been modified accordingly.

Conclusions. Systematic screening of respiratory and intestinal samples in VLBWI provides valuable information for the choice of empiric antibiotic treatment of severe infections. Early implementation of appropriate hygiene measures prevents transmission of multi-resistant pathogens in this high-risk population. Knowledge of the endemic level of PNP can lead to the early detection of an unusual increase of PNP and thus identify an imminent outbreak.

Fig.1 First prove of gramnegative possible nosocomial pathogens (PNP), incidence over time

