

## 21. S - CLINICAL USE OF ANTIMICROBIALS FOR TREATMENT

**The impact of gestational age and geographical region on anti-infectives' use in European neonatal intensive care units (NICU)**I. MESEK<sup>1</sup>, G. Nellis<sup>1</sup>, J. Lass<sup>1</sup>, T. Metsvaht<sup>1</sup>, H. Varendi<sup>2</sup>, H. Visk<sup>3</sup>, M. Tumer<sup>4</sup>, I. Lutsar<sup>1</sup><sup>1</sup>University of Tartu, Institute of Microbiology, Tartu, Estonia<sup>2</sup>Tartu University Hospital- Children's Clinic, Neonatal Unit, Tartu, Estonia<sup>3</sup>University of Tartu, Institute of Family Medicine and Public Health, Tartu, Estonia<sup>4</sup>University of Liverpool, Institute of Translational Medicine, Liverpool, United Kingdom**Background**

Anti-infectives are the most commonly used medicines in NICUs. We aimed to describe variations related to geographical region (GR) and gestational age (GA) in the use of anti-infectives in Europe.

**Methods**

We performed a Point Prevalence Survey in 2012 including 89 NICUs from 21 European countries. During one day all neonatal prescriptions and demographic data were registered in a web-based database. Medicines were classified based on WHO Anatomical Therapeutic Chemical (ATC) classification system according to the 1st, 3rd and 5th level. Prescription rates (number of prescriptions/100 neonates) were calculated. Neonates were grouped based on gestational age (22-27 weeks, extremely preterm; 28-31 weeks, very preterm; 32-36 weeks, late preterm;  $\geq 37$  weeks, term). Participating countries were classified into GR (according to the United Nations Statistics department instructions). The impact of GA and GR on anti-infectives' use were analysed using uni- and multivariate logistic regression analysis; East region and extremely premature neonates were used as reference group.

**Results**

In total, 572 prescriptions of anti-infectives to 315 (43% of 726) neonates were recorded. The prescription rate was highest for penicillins (28/100), aminoglycosides (23/100), other beta-lactams (12/100) and other antibacterials (9/100). In univariate analysis GA or GR significantly affected the use of anti-infectives except penicillins. In multivariate analysis compared to reference group the use of anti-infectives in general was higher in South and lower in very- and late preterms. The use of aminoglycosides was significantly higher in South and North, penicillins in North, other antibacterials use was higher in South and lower in late preterm and term neonates (Table).

ATC group (ATC code) Frequently used active ingredients	Geographical region			Gestational age group		
	North OR (95% CI)	South OR (95% CI)	West OR (95% CI)	Very preterm OR (95% CI)	Late preterm OR (95% CI)	Term OR (95% CI)
<b>Anti-infectives (total)</b> Gentamicin, Ampicillin, Benzylpenicillin	1.03 (0.7-1.52)	<b>1.65</b> <b>(1.06-2.58)*</b>	0.66 (0.4-1.09)	<b>0.55</b> <b>(0.32-0.95)*</b>	<b>0.48</b> <b>(0.29-0.81)*</b>	0.74 (0.44-1.25)
<b>Penicillins (J01C)</b> Ampicillin, Benzylpenicillin, Amoxicillin	<b>1.68</b> <b>(1.09-2.6)*</b>	1.35 (0.82-2.23)	0.99 (0.56-1.74)	1.18 (0.62-2.23)	1.47 (0.8-2.68)	1.75 (0.95-3.2)
<b>Aminoglycosides (J01G)</b> Gentamicin, Amikacin	<b>2.17</b> <b>(1.35-3.5)*</b>	<b>2.4</b> <b>(1.42-4.07)*</b>	0.67 (0.33-1.36)	0.86 (0.44-1.7)	1.02 (0.54-1.93)	1.58 (0.85-2.96)
<b>Other antibacterials (J01X)</b> Vancomycin, Teicoplanin, Metronidazole	0.66 (0.3-1.47)	<b>2.47</b> <b>(1.16-5.26)*</b>	0.82 (0.33-2.05)	0.63 (0.29-1.34)	<b>0.21</b> <b>(0.09-0.5)*</b>	<b>0.23</b> <b>(0.1-0.54)*</b>

**Conclusions**

While GA-dependent differences in anti-infectives consumption are well understood, regional variations are more difficult to explain suggesting a lack of uniformity in use of anti-infectives in Europe.

**Clinical Trial Registration (Please input N/A if not registered)**

\*\*\*\*\*