

COLISTIN AND TOBRAMYCIN RESISTANCE DURING LONG TERM USE OF SELECTIVE DECONTAMINATION STRATEGIES IN DUTCH ICUSB.H.J. Wittekamp¹, E.A.N. Oostdijk², M.J.M. Bonten²¹Julius Center for health sciences and primary care, UMC Utrecht, Utrecht, Netherlands ; ²Medical microbiology, UMC Utrecht, Utrecht, Netherlands**Objective:**

Selective decontamination of the digestive tract (SDD) and selective oropharyngeal decontamination (SOD) improve ICU patients outcome in settings with low levels of antibiotic resistance, but the long-term effects of SDD and SOD on colistin and tobramycin resistance among gram negative bacteria are unknown.

Methods:

SDD and SOD were used in 5 ICUs as unit-wide interventions during two cluster-randomized studies; 6 months per intervention in study I (2005-2007) and 12 months during study II (2010-2012). During study I there was a 6-month period of standard care (no SDD/SOD). During the studies monthly point prevalence surveys were performed to measure colistin and tobramycin resistance among gram negative bacteria by obtaining rectal and respiratory samples from all patients present in the ICU on a specific day. All sites used SDD in the interval between both studies.

Results:

During study I 1.007 respiratory and 1.093 rectal samples were obtained from 1.189 patients. During study II 1.755 respiratory and 1.808 rectal samples were obtained from 1.524 patients.

In study I prevalence for tobramycin resistance in rectal samples was lowest during SDD (6.58%), as compared to standard care and SOD (RR0.55 (0.34-0.87)) and 0.46 (0.29-0.72), respectively). (Table 1) As compared to the standard care period in study I, the average point prevalence of tobramycin resistance had declined in study II; from 12.05% in the standard care period to 4.23% during SDD and 8% during SOD in rectum samples (RR0.35 (0.23-0.53) and 0.66 (0.47-0.95), respectively) and from 10.91% in the standard care period to 5.26% during SDD (RR0.48 (0.32-0.73)) and 4.53% during SOD in respiratory tract samples (RR0.42 (0.27-0.64)). (Table 1)

The prevalence for colistin resistance in rectal samples ranged from 1.2% (SOD study I) to 3.01% (standard care study I), and were 1.13% and 1.73% during SDD and SOD, respectively in study period II. (Table 1) In respiratory tract samples, prevalence of colistin resistance ranged from 0.88% (standard care study I) to 2.14% (SDD study I) and were 1.12% and 0.58% during SDD and SOD in study period II. There were no statistically significant differences in the prevalence of colistin resistance between intervention periods.

Conclusions:

There was no evidence of increasing prevalence of resistance against colistin and tobramycin among gram-negative isolates during a mean of 6.5 years of SDD or SOD use in five Dutch ICUs. The effects in settings with higher levels of antibiotic resistance remains to be determined.

	Prevalence (%; (95% CI))				
	Study I			Study II	
	Standard Care	2004-2006 SDD I	SOD I	2009-2013 SDD II	SOD II
Colistin					
Rectum	3,01 (1,26-4,76)	2,78 (1,16-4,40)	1,20 (0,03-2,37)	1,73 (0,89-2,57)	1,13 (0,62-2,00)
Respiratory tract	0,88 (0,01-1,88)	2,14 (0,67-3,61)	1,69 (0,22-3,16)	1,12 (0,43-1,81)	0,58 (0,07-1,09)
Tobramycin					
Rectum	12,05 (8,71-15,39)	6,58 (4,13-9,03)	14,41 (10,64-18,18)	4,23 (2,93-5,53)	8,00 (6,21-9,79)
Respiratory tract	10,91 (7,59-14,23)	6,70 (4,16-9,24)	9,49 (6,15-12,83)	5,26 (3,80-6,72)	4,53 (4,14-5,92)

* No data available, all sites continued SDD as standard care