The increased use of amoxicillin/clavulanate in orphanages: how this influences the pneumococcal resistance profile?

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Background: Orphanages have been shown to be reservoirs of resistant *S. pneumoniae* (Spn) which could spread to the community. A special study was performed to evaluate changes in resistance before (Period I, 2003) and after (Period II, 2004) increased use of amoxicillin/clavulanate.

Methods: In prospective study nasopharyngeal swabs were collected from 772 children < 7 years in Period I, and 752 in Period II from 12 orphanages in 5 Russian cities. Susceptibility to penicillin G (PEN), amoxicillin (AMO), amoxicillin/clavulanate (AMC), cefuroxime (CEF), cefotaxime (CTX), erythromycin (ERY), clindamycin (CLI), chloramphenicol (CHL), tetracycline (TET) and co-trimoxazole (SXT) was performed by microdilution (NCCLS). Based on susceptibility testing results in Period I, recommendations on predominant use of AMC with restriction of macrolides and SXT where applicable were made.

Results: A total of 399 *S. pneumoniae* were isolated in period I and 397 in period II. Susceptibility testing results are presented in the table. Use of AMC increased from 19 to 45 courses/100 children/year, cephalosporins from 42 to 67 courses/100 children/year.

	Period I		Period II	
Drug	I/R (%)	MIC_{50}/MIC_{90}, mg/L	I/R (%)	MIC_{50}/MIC_{90}, mg/L
PEN	39.6/25.8	0.5/4	42.1/19.7	0.125/4
AMO	0.8/1.8	0.125/2	0.8/0.5	0.06/1
AMC	0.5/1.8	0.125/2	0.8/0.3	0.06/1
CEF	1.3/39.4	1/16	17.9/31.2*	0.5/16
CTX	3.8/2.5	0.25/1	9.3/8.3*	0.06/1
ERY	1.0/26.6	0.03/256	0.8/32.5	0.03/256
CLI	0/19.8	0.03/128	0.8/22.4	0.03/128
CHL	0/15.0	2/8	0/8.1*	2/2
TET	4.0/56.6	8/32	2.5/55.4	8/32
SXT	34.8/35.6	1/8	36.5/30.7	1/4

$p<0.05$

Conclusions: Intervention with AMC was not associated with increase of PEN-NS (I+R), AMO-NS, AMC-NS isolates. In contrast to this, increased use of cephalosporins resulted in a significant increase of CEF-NS and CTX-NS isolates.