

EPIDEMIOLOGY AND SUSCEPTIBILITY OF PATHOGENS FROM INTRA-ABDOMINAL INFECTIONS IN DIFFERENT PATIENT SETTINGS IN TURKEY: SMART 2011-2012

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Objectives: Intra-abdominal infections (IAI) are significant causes of morbidity and mortality, and are often difficult to diagnose early and treat appropriately. This report from the Study for Monitoring Antimicrobial Resistance Trends (SMART) summarizes the epidemiology and susceptibility of Gram-negative pathogens (GNP) from intra-abdominal infections (IAI) in Turkey in 2011-2012 in ICU and non-ICU wards, as well as in all patient settings combined.

Methods: Six laboratories in Turkey each collected up to 100 consecutively isolated GNP per year from patients with IAI. Only one isolate per patient was accepted. Susceptibility and ESBL phenotypes for 503 GNP collected in 2011 and 2012 were determined using CLSI broth microdilution at a central laboratory.

Results: The four most common species were *Escherichia coli*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, and *Pseudomonas aeruginosa*. *E. coli* was found in 26%, 43%, and 39% of IAI in ICUs, non-ICU hospital wards, and in all settings combined, respectively. The prevalence for *K. pneumoniae* was 14%, 13%, and 14%, respectively; for *P. aeruginosa* 12%, 14%, and 14%, respectively; and for *A. baumannii* 24%, 8%, and 12%, respectively. ESBL rates (for *E. coli* and *K. pneumoniae*) and susceptibility are shown below. Values $\geq 90\%$ are shaded and bolded.

ETP=ertapenem, IPM=imipenem, AMK=amikacin, FEP=cefepime, CTX=cefotaxime, FOX=cefoxitin, CAZ=ceftazidime, CRO=ceftriaxone, CIP=ciprofloxacin, LVX=levofloxacin, SAM=ampicillin-sulbactam, TZP=piperacillin-tazobactam. Blank=not applicable.

	n	%												
		ESBL	ETP	IPM	AMK	FEP	CTX	FOX	CAZ	CRO	CIP	LVX	SAM	TZP
<i>E. coli</i>														
ICU	24	29	100	95.8	95.8	75.0	70.8	91.7	79.2	70.8	62.5	62.5	20.8	75.0
Non-ICU	158	53	96.2	98.1	96.8	57.0	45.6	88.0	63.3	45.6	52.5	53.2	16.5	72.8
All	195	49	96.9	98.0	96.9	60.0	49.2	88.7	65.1	49.2	54.4	54.9	18.0	73.3
<i>K. pneumoniae</i>														
ICU	13	54	84.6	84.6	100	53.9	46.2	100	69.2	53.9	76.9	76.9	23.1	69.2
Non-ICU	48	40	89.6	93.8	95.8	64.6	58.3	100	64.6	58.3	77.1	81.3	39.6	70.8
All	70	44	88.6	91.4	97.1	61.4	54.3	100	65.7	55.7	75.7	78.6	32.9	71.4
<i>P. aeruginosa</i>														
ICU	11				72.7	54.6								
Non-ICU	51		36.4	72.7	54.6			63.6		54.6	54.6			54.6
All	72		54.9	94.1	78.4			80.4		92.2	92.2			76.5
<i>A. baumannii</i>														
ICU	22			18.2	22.3	4.6			18.2	4.6	4.6	18.2	4.6	4.6
Non-ICU	31			41.9	58.1	9.7			9.7	9.7	12.9	25.8	12.9	9.7
All	60			33.3	46.7	10.0			15.0	8.3	11.7	25.0	11.7	10.0

Conclusion:

- The distribution of species found in IAI differed somewhat between settings, with *E. coli* being more prevalent in non-ICU wards than in ICUs, and *A. baumannii* being more prevalent in ICUs.
- ESBL rates were high in Turkey compared to global rates described elsewhere, and also differed by setting; similarly to other reports in the literature, ESBL+ *K. pneumoniae* were more common in ICUs. ESBL+ *E. coli*, on the other hand, were more common in non-ICU wards.
- Accordingly, the susceptibility of *E. coli* was generally lower in non-ICU wards, while the reverse was true for *K. pneumoniae*.
- Overall in Turkey, the susceptibility of the two most prevalent IAI pathogens (*E. coli* and *K. pneumoniae*) was low, with only ertapenem, imipenem and amikacin inhibiting $\geq 90\%$ of *E. coli*, and imipenem, amikacin, and cefoxitin inhibiting $\geq 90\%$ of *K. pneumoniae*.
- Susceptibility of *A. baumannii* is exceptionally low in Turkey for both ICU and non-ICU, and that of *P. aeruginosa* in ICU was typically 20-40% lower than non-ICU.