SUSCEPTIBILITY OF E.COLI ISOLATES DURING 2012 IN GJILANI REGION

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Abstract

E.coli infections are amongst the most common pathogenic infections with an increasing resistance to antimicrobials. The objective of this study was to determine antimicrobial susceptibility patterns of E.coli isolates during 2012. A retrospective study was carried from urine samples of both inpatients and outpatients in the laboratories of National Institute of Public Health of Kosova – Gjilan branch. Identification of the microorganisms was done with standard microbiological tests, while antibiotic sensitivity was determined with Kirby Bauer disc diffusion method. During the study period, 7113 samples were analysed, 2431 rezulted positive , of which 807 resulted with E.coli (33.2 %) obtained from 457 patients. Of this, 392 (85.8 %) were collected from females and 65 (14.2 %) from males. Samples processed from outpatients were 93 % (425), whereas 7 % (32) were from hospitalised patients. In urine were isolated 354 (77.5 %) , genital system 67 (14.6 %) , wounds 13 (2.8 %) , gastrointestinal system 10 (2.2 %). Overall , E.coli isolated showed resistance 65.2 % to Ampicilline , 44.3 % to Trimethoprim-sulphamethoxazole, 30 % to Pipemidic acid and 42.9 % to Tetracycline. A significant upward trend in resistance was observed from hospitalized patient samples , especially from wounds, which can be considered a risc factor for intrahospital infections. As it was expected E.coli resulted multiresitant to three or more antimicrobics , therefore it can be considered as a multiresistant bacteria. Current data on the prevalence of multidrug resistance among E.coli isolates should be a consideration to change the current empiric treatment of E.coli infections.

Key words: *E.coli, Multiresitance, Antibiotics*

Background: Escherichia coli is a microorganism of clinically importance of human pathology, causing human urinary tract infections, septic infections, it is the leading cause of neonatal meningitis, wound infections, pneumonia and toxic infections. The increasing rate of antimicrobial resistance among E. coli strains is a growing concern worldwide.

Objective: The objective of this study was to determine antimicrobial susceptibility patterns of E.coli isolates during 2012.

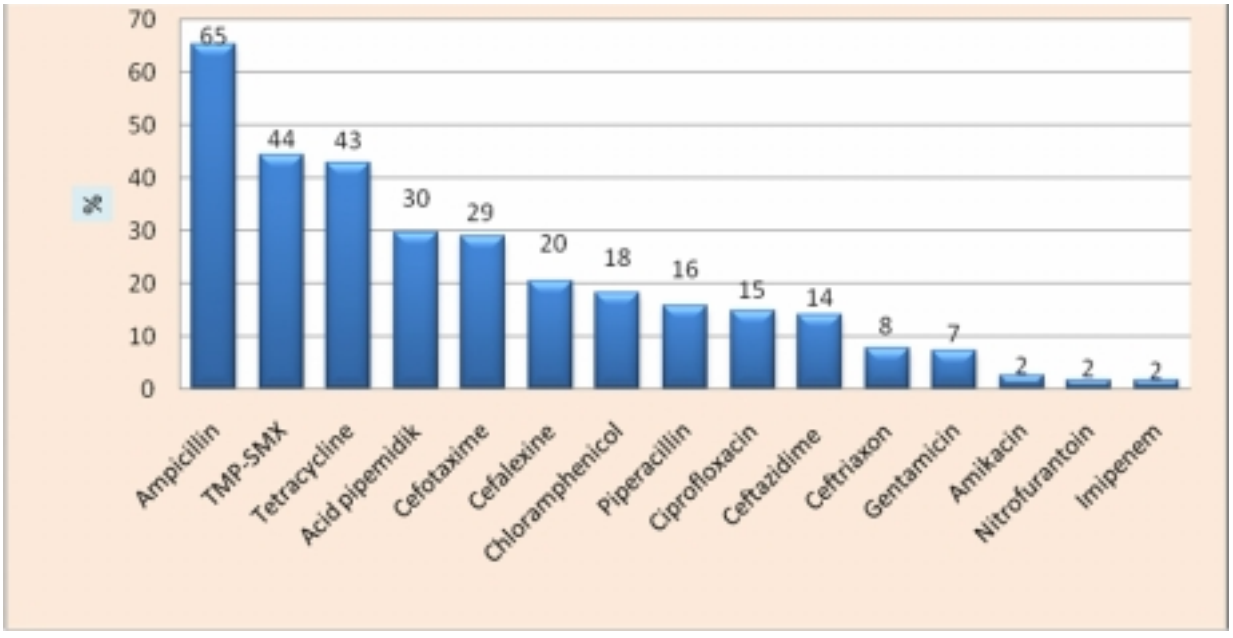
Material and methods: A retrospective study was carried from urine samples of both inpatients and outpatients in the laboratories of National Institute of Public Health of Kosova – Gjilan branch. Antimicrobial susceptibility tests were done according to NCCLS instructions , on Müeller-Hinton agar , using Kirby Bauer disk diffusion method.

Results: During the study period, 7113 samples were analysed, 2431 rezulted positive , of which 807 resulted with E.coli (33.2 %) obtained from 457 patients. Of this, 392 (85.8 %) were collected from females and 65 (14.2 %) from males. Samples processed from outpatients were 93 % (425), whereas 7 % (32) were from hospitalised patients. In urinary tract were isolated 354 (77.5 %) , genital system 67 (14.6 %) , wounds 13 (2.8 %) , gastrointestinal system 10 (2.2 %). Overall , E.coli isolated showed resistance 65.2 % to Ampicilline , 44.3 % to Trimethoprim-sulphamethoxazole, 30 % to Pipemidic acid and 42.9 % to Tetracycline. A significant upward trend in resistance was observed from hospitalized patient samples , especially from wounds, which can be considered a risc factor for intrahospital infections. As it was expected E.coli resulted multiresitant to three or more antimicrobics , therefore it can be considered as a multiresistant bacteria.

Table.1. The overall antimicrobial resistance profile of Escherichia coli from clinical samples

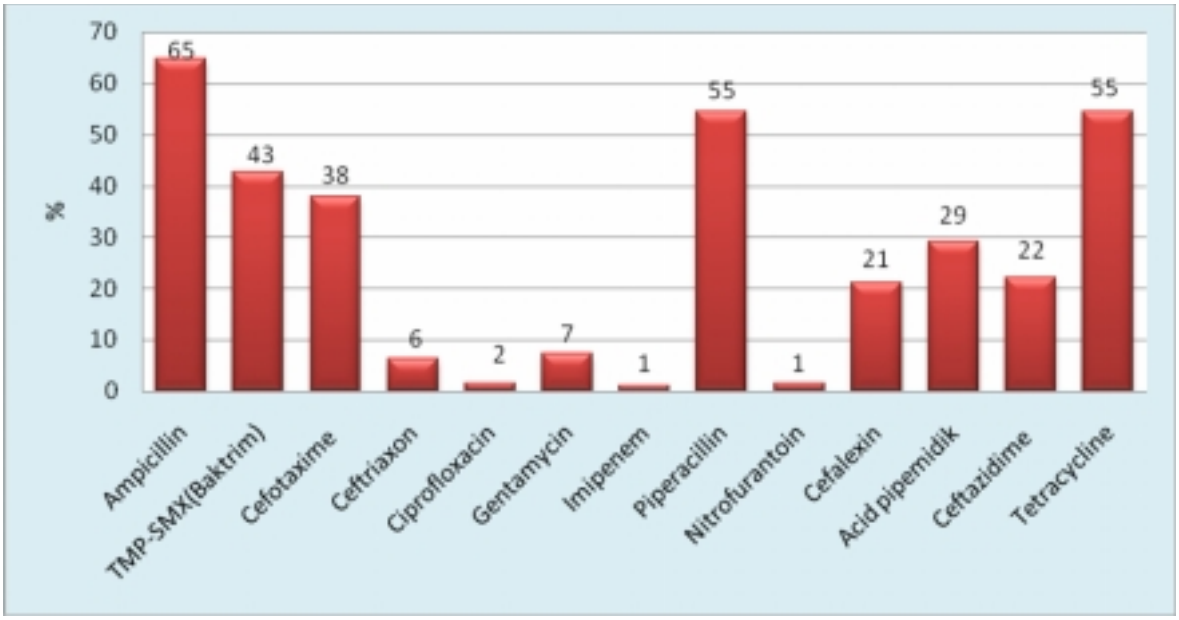
	Outpatients Resistant /total samples examined		Inpatients Resistant /total samples examined		Total resistant		Total samples examined
Antimicrobial agent	Nr/Total	%	Nr/Total	%	Nr.	%	Nr.
Ampicillin	277/425	65.17	21/32	65.62	298	65.20	457
TMP-SMX(Baktrim)	175/401	43.64	17/32	53.12	192	44.34	433
Tetracycline	8/18	44.44	1/3	33.33	9	42.85	21
Acid pipemidik	100/339	29.49	6/17	35.29	106	29.77	356
Cefotaxime	15/54	27.77	2/5	40	17	28.81	59
Cefalexine	67/350	19.14	8/19	42.1	75	20.32	369
Chloramphenicol	2/9	22.22	0/2	0	2	18.18	11
Piperacillin	15/87	17.24	1/14	7.14	16	15.84	101
Ciprofloxacin	56/404	13.86	8/30	26.66	64	14.74	434
Ceftazidime	10/72	13.88	2/13	15.38	12	14.11	85
Ceftriaxon	23/338	6.84	5/30	16.66	28	7.60	368
Gentamicin	28/416	6.73	4/30	13.33	32	7.17	446
Amikacin	1/68	1.47	1/13	7.7	2	2.46	81
Nitrofurantoin	6/355	1.69	0/17	0	6	1.61	372
Imipenem	6/416	1.44	1/30	3.33	7	1.60	446

Graph.1. The overall antimicrobial resistance profile of Escherichia coli from clinical samples



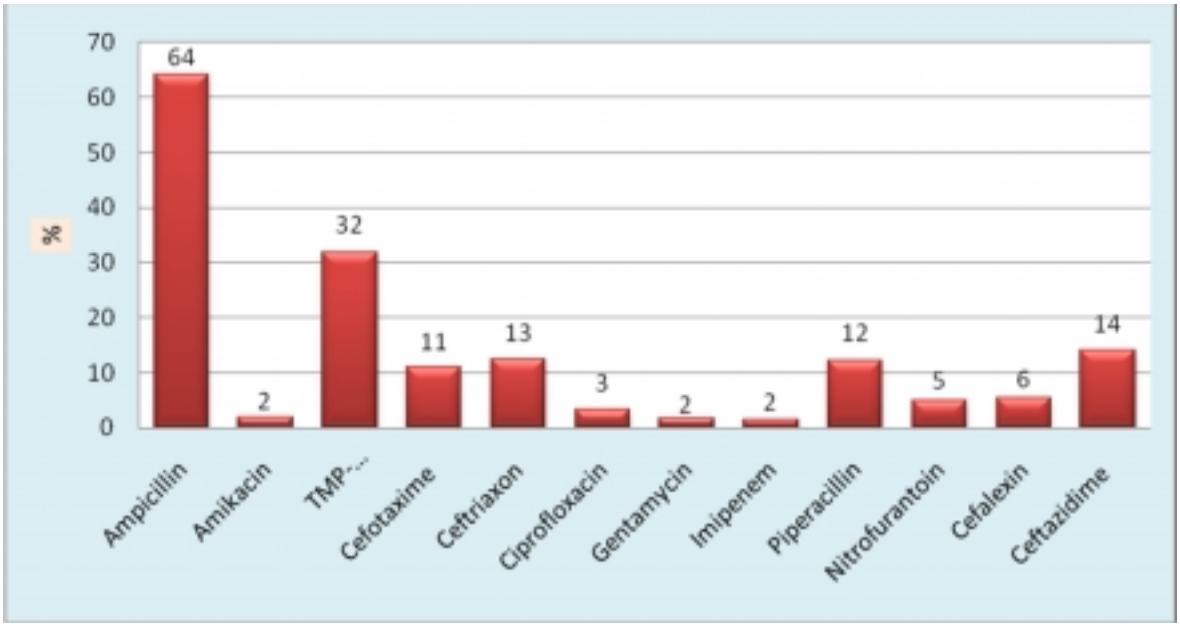
As shown in Table 1 , the overall rate of antimicrobial resistance of E.coli was 63.79 % to Ampicilline, 44.34 % to TMP-SMX, 30 % to Pipemidic acid and 42.85 % to Tetracycline.

Graph.2. The antimicrobial resistance profile of Escherichia coli in urinay tract



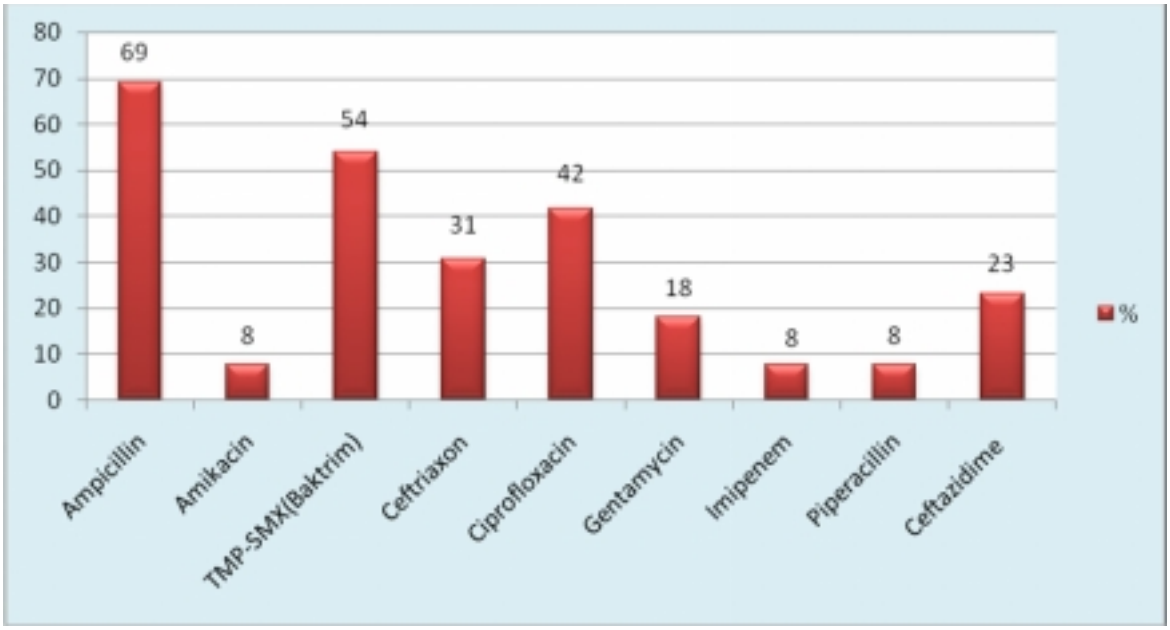
E.coli isolated in urinary tract resulted with high resitance in more than three antimicrobials: Ampicillin 65%, TMP-SMX 43%, Pipemidic acid 29% and Tetracycline 54.54 %

Graph.3 . The antimicrobial resistance profile of Escherichia coli in genital system



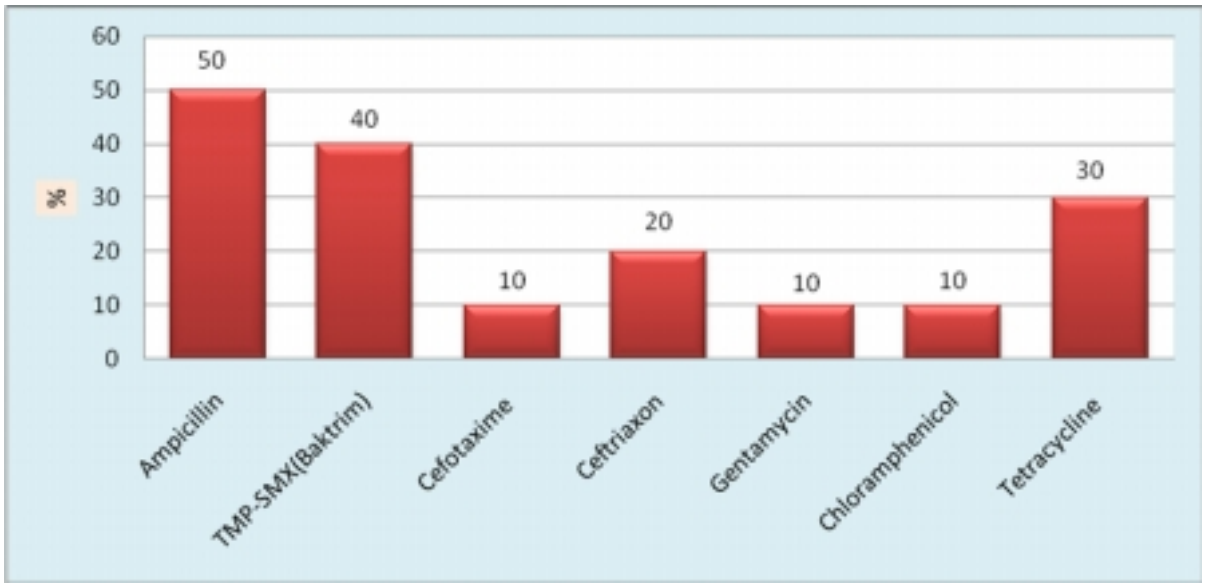
E.coli isolated form genitaly system showed resistace 64 % to Ampicilline and 32 % to TMP-SMX .

Graph.4 . The antimicrobial resistance profile of Escherichia coli in wounds



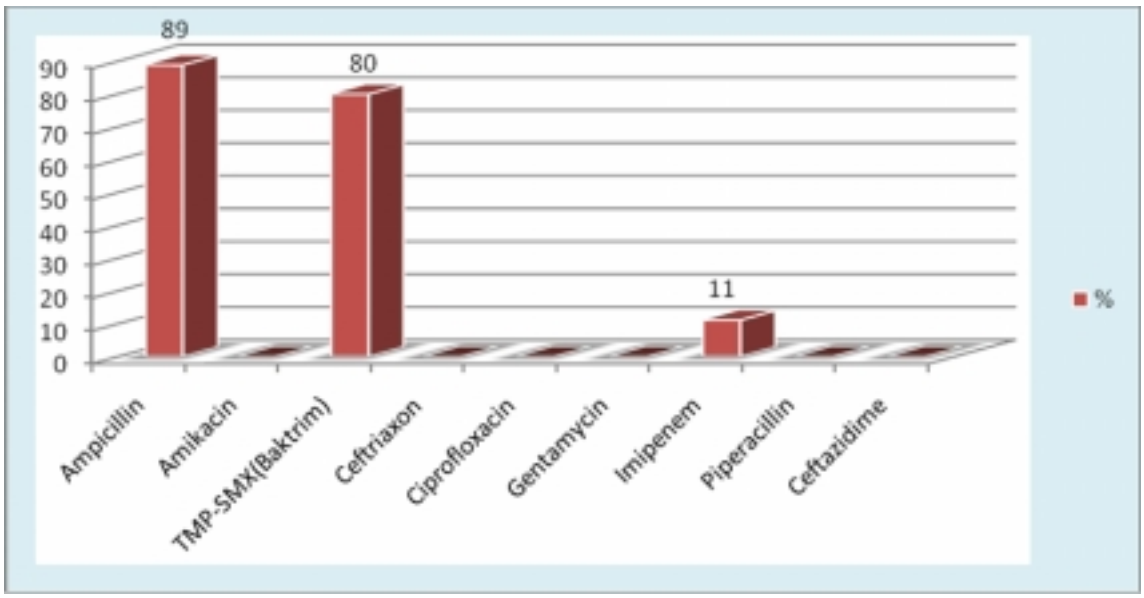
E.coli isolated from wound samples resulted multiresistant to three or more antimicrobics, Ampicillin 69%, TMP-SMX 54%, Ciprofloxacin 42% dhe Ceftriaxon 31%.

Graph.5 . The antimicrobial resistance profile of Escherichia coli in gastrointestinal system



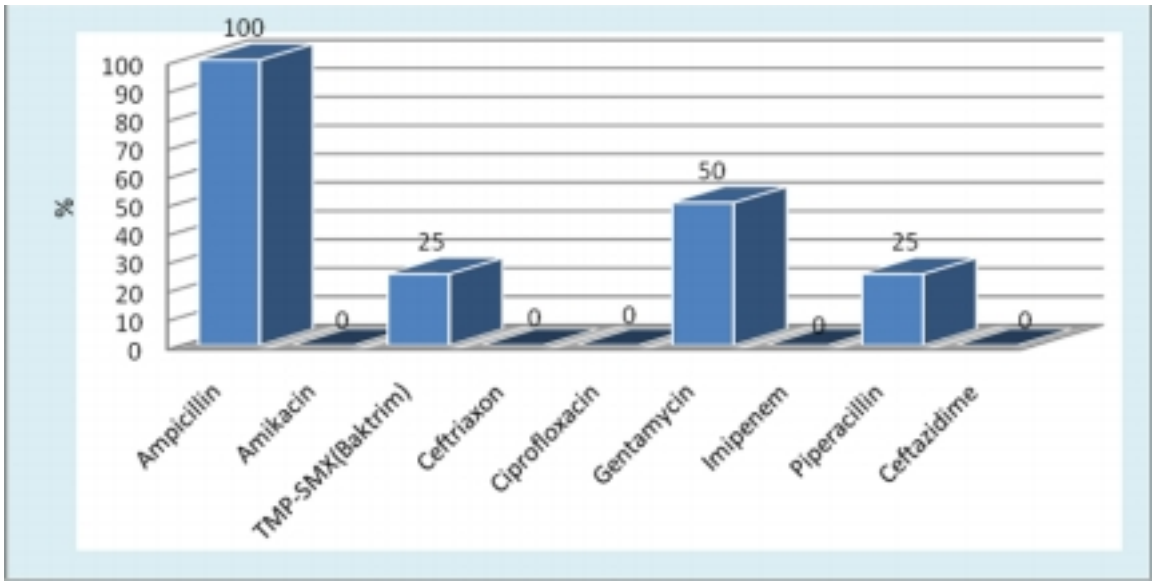
E.coli isolated from gastrointestinal system resulted to be resistant to Ampicillin 50 % , TMP-SMX 40 % and Tetracycline 30%.

Graph.6 . The antimicrobial resistance profile of Escherichia coli in respiratory system



E.coli strains resulted to be of a high resitance also in respiratory tract : to Ampicilline 89 % , TMP-SMX 80 % .

Graph.7. The antimicrobial resistance profile of Escherichia coli in other samples(eye, ear)



E.coli samples isolated from eye and ear resulted to be resitant 100 % to Ampicillne and 50 % to Gentamycine.

Conculsions. Growing trends of resistance of E.coli , should be considered as a dangerous threat for intrahospital infections , especially for wound infections. Current data on the prevalence of multidrug resistance among E.coli isolates should be a consideration to change the current empiric treatment of E.coli infections. Periodic monitoring of antimicrobial susceptibility both in the community and hospital settings is recommended.

Note: Not all samples were tested with the same number of antimicrobials.