



EARS-NET EQA 2021

12.04.2022

Saadetud proovid:

E.coli 1

E.coli 2

E.coli 3

K.pneumoniae 1

K.pneumoniae 2

K.pneumoniae 3

Analüüsist on eemaldatud antibiootikumid, mida ei väljastata.

Roosalt on märgitud antibiootikumid, mis erinesid õigest tulemusest 2 või rohkema lahjenduse võrra/test on sooritatud disk-difusiooni meetodil.
Kollaselt need, mis erinesid ühe lahjenduse piires

E.coli 1

Antimicrobial	EARS-Net 2021 EC.1*
Amikacin	
Amoxicillin	<i>bla</i> _{TEM-1}
Amoxicillin/clavulanic acid fixed conc	
Ampicillin	<i>bla</i> _{TEM-1}
Cefepime	
Cefotaxime	
Ceftazidime	
Ceftriaxone	
Ciprofloxacin	<i>gyrA</i> S83L
Colistin	
Ertapenem	
Gentamicin	<i>aac(3)-IId</i>
Imipenem	
Levofloxacin	<i>gyrA</i> S83L
Meropenem	
Moxifloxacin	<i>gyrA</i> S83L
Norfloxacin	<i>gyrA</i> S83L
Ofloxacin	<i>gyrA</i> S83L
Piperacillin/tazobactam constant 4	
Tigecycline	ND
Tobramycin	<i>aac(3)-IId</i>

E.coli 1

Antimicrobial	EUCAST clinical breakpoints (µg/mL) MIC		EARS-Net 2021 EC1		A		B		C		D		E		F		G		H		I		J			
	S ≤	R >	Expected MIC value (µg/mL)	Expected interpretation	Automated	disk/tablet/MIC	Automated	disk/tablet	Automated	disk/tablet	Automated	disk/tablet	Automated	MIC/disk	MIC-broth	Gradient/MIC/disk	disk/tablet/gradient	Automated/disk/tablet	Automated/disk/tablet	Automated/disk/tablet	Automated/disk/tablet	Automated/disk/tablet	Automated/disk/tablet	Automated/disk/tablet		
Amikacin	8	8	= 2	S	<= 4	S	18	S	<= 2.0	S	> 18	S	19	S	<= 2	S			= 2.0	S			<= 2	S		
Amoxicillin/ clavulanic acid fixed conc*	8	8	= 8	S	8	S	20	S	16	R	21	S	20	S					= 12.0	S	24	S	8	S	90%/100%	
Ampicillin	8	8	> 32	R	> 8	R			> 32	R								> 64	R	=	NA	6	R	6	R	
Cefepime	1	4	<= 0.06	S	<= 1	S	30	S	<= 0.12	S			29	S	<= 0.12	S	<= 0.06	S	= 0.032	S	36	S	<= 0.12	S		
Cefotaxime	1	2	= 0.06	S			25	S	<= 0.25	S	28	S	26	S	<= 0.25	S	<= 0.25	S	= 0.032	S	29	S	<= 0.25	S		
Ceftazidime	1	4	= 0.25	S	<= 0.5	S	24	S	<= 0.12	S			25	S	<= 0.12	S	<= 0.25	S	= 0.094	S			<= 0.12	S		
Ceftriaxone	1	2	= 0.06	S	<= 0.5	S													=	NA			<= 1	S		
Ciprofloxacin	0.25	0.5	= 0.5	I	<= 0.25	S	<= 23	I	<= 0.25	S	26	S	23	I	= 0.25	S	= 0.25	S	= 0.25	S	25	S	<= 0.25	S	20%/80%	
Colistin	2	2	<= 0.25	S	<= 1	S			<= 0.5	S					= 0.5	S	<= 1	S	= 0.5	S			<= 0.5	S		
Ertapenem	0.5	0.5	= 0.008	S	<= 0.25	S	30	S	<= 0.12	S	33	S	32	S	32	S	<= 0.015	S	= 0.016	S	= 0.023	S	33	S		
Gentamicin	2	2	> 16	R	> 4	R	6	R	> 16	R			6	R	> 16	R	> 32	R	= 96.0	R	6	R	> 16	R		
Imipenem	2	4	= 0.12	S	<= 0.25	S			<= 0.25	S	29	S	28	S	<= 0.25	S	= 0.25	S	= 0.0125	S			<= 0.25	S		
Meropenem	2	8	<= 0.015	S	<= 0.125	S	31	S	<= 0.25	S	29	S	28	S	<= 0.25	S	<= 0.03	S	= 0.032	S	34	S	<= 0.25	S		
Piperacillin/ tazobactam constant 4*	8	8	= 2	S	<= 4	S	22	S	<= 4.0	S	23	S	22	S	<= 4	S			= 1.0	S	27	S	<= 4	S		
Tigecycline	0.5	0.5	= 2	R	2	R			= 4.0	R					2	I		2	R	=	NA			2	R	90%/100%
Tobramycin	2	2	= 8	R	> 4	R			= 8.0	R					8	R			= 12.0	R			8	R		

Probleemsed antibiootikumid:

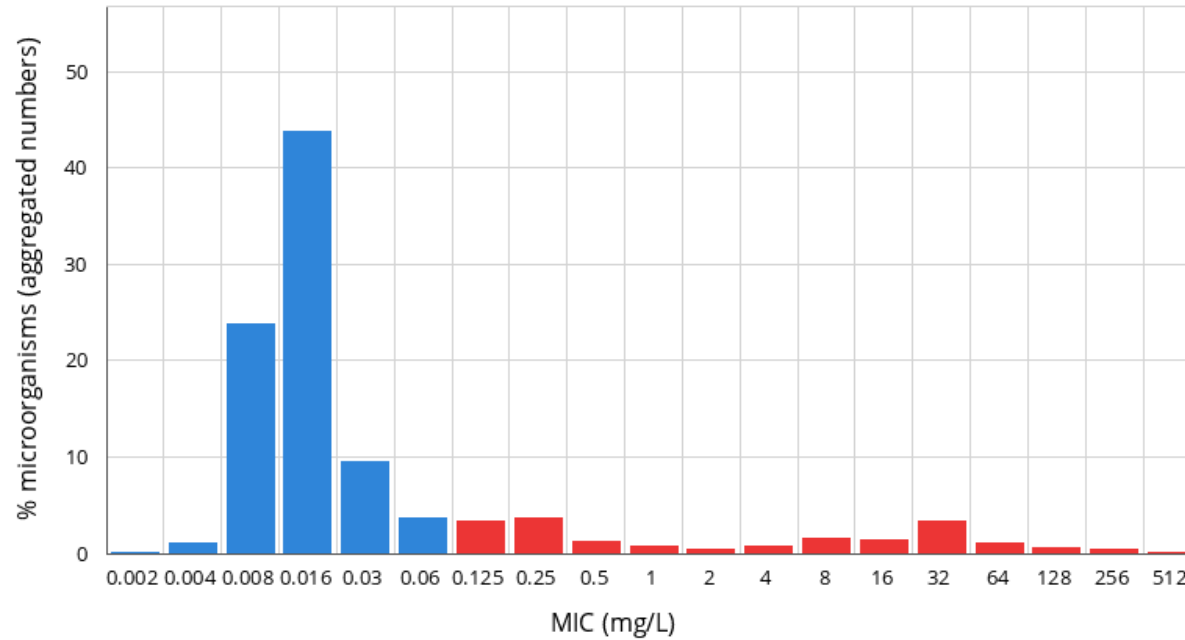
Tsiprofloksatsiin

Tigetsükliin

Amoksitsilliin-klavulaanhappega

Ciprofloxacin / Escherichia coli
International MIC distribution - Reference database 2022-04-06
Based on aggregated distributions

MIC distributions include collated data from multiple sources, geographical areas and time periods and can never be used to infer rates of resistance



MIC
Epidemiological cut-off (ECOFF): 0.064 mg/L
Wildtype (WT) organisms: ≤ 0.064 mg/L

Confidence interval: -
16702 observations (55 data sources)

EUCAST CIP disk brakepoint S ≥ 25; R < 22mm; ATU 22-24mm

Strain EARS-Net 2021 EC.1

Most deviations were observed for ciprofloxacin and reported throughout all methodologies used by the laboratories. While some can be attributed to the inherent method variability and are in the acceptable variation range, they can also be derived from the presence of one point mutation in the *gyrA* gene. This single point mutations confers borderline MIC values and inhibition zone diameters to ciprofloxacin and levofloxacin, which can easily be misread or misinterpreted.

E.coli 2

Antimicrobial	EARS-Net 2021 EC.2**
Amikacin	
Amoxicillin	<i>bla</i> _{TEM-1}
Amoxicillin/clavulanic acid fixed conc	<i>bla</i> _{OXA-244} , <i>bla</i> _{CTX-M-14b}
Ampicillin	<i>bla</i> _{TEM-1}
Cefepime	<i>bla</i> _{OXA-244} , <i>bla</i> _{CTX-M-14b}
Cefotaxime	<i>bla</i> _{OXA-244} , <i>bla</i> _{CTX-M-14b}
Ceftazidime	<i>bla</i> _{OXA-244} , <i>bla</i> _{CTX-M-14b}
Ceftriaxone	<i>bla</i> _{OXA-244} , <i>bla</i> _{CTX-M-14b}
Ciprofloxacin	
Colistin	
Ertapenem	<i>bla</i> _{OXA-244} , <i>bla</i> _{CTX-M-14b}
Gentamicin	
Imipenem	
Levofloxacin	
Meropenem	
Moxifloxacin	
Norfloxacin	
Ofloxacin	
Piperacillin/tazobactam constant 4	<i>bla</i> _{OXA-244} , <i>bla</i> _{CTX-M-14b}
Tigecycline	
Tobramycin	

E.coli 2

Antimicrobial	EUCAST clinical breakpoints MIC (µg/mL)		EARS-Net 2021 EC2		A		B		C		D		E		F		G		H		I		J		
	S ≤	R >	Expected MIC value (µg/mL)	Expected interpretation	Automated	disk/tablet/MIC	Automated	disk/tablet	disk/tablet	Automated/MIC/disk	MIC-broth	Gradient/MIC/disk	disk/tablet/gradient	Automated/disk/tablet											
Amikacin	8	8	= 2	S	<= 4	S	19	S	<= 2.0	S			19	S	<= 2	S			= 4.0	S			<= 2	S	
Amoxicillin/ clavulanic acid fixed conc*	8	8	> 128	R	> 32	R	6	R	> 32	R	10	R	6	R					> 256.0	R	6	R	> 32	R	
Ampicillin	8	8	> 32	R	> 8	R			> 32	R							> 64	R	= 6.0	R	6	R	6	R	
Cefepime	1	4	> 32	R	> 16	R	11	R	> 32	R	8	R	11	R	> 32	R	> 32	R	= 32.0	R	14	R	> 32	R	
Cefotaxime	1	2	> 64	R			6	R	> 64	R	6	R	6	R	> 64	R	64	R	> 32.0	R	6	R	> 64	R	
Ceftazidime	1	4	= 8	R	4	I	17	R	= 8.0	R	15	R	15	R	4	I	16	R	= 4.0	R			8	R	80%/100%
Ceftriaxone	1	2	> 4	R	> 4	R													=	NA			> 64	R	
Ciprofloxacin	0.25	0.5	= 0.03	S	<= 0.25	S	32	S	<= 0.25	S	35	S	27	S	<= 0.25	S	= 0.03	S	= 0.012	S	33	S	<= 0.25	S	
Colistin	2	2	<= 0.25	S	<= 1	S	32	R	<= 0.5	S					= 0.25	S	<= 1	S	= 0.5	S	1	S	<= 0.5	S	90%
Ertapenem	0.5	0.5	= 4	R	> 1	R	16	R	> 8.0	R	13	R	14	R	15	R	> 2	R	= 4.0	R	6	R	6	R	
Gentamicin	2	2	= 1	S	<= 1	S	18	S	<= 1.0	S	19	S	17	S	<= 1	S	<= 0.5	S	= 0.5	S	26	S	<= 1	S	
Imipenem	2	4	= 1	S	2	S			<= 0.25	S	21	I	23	S	= 0.5	S	4	I	= 3.0	I			= 0.5	S	70%/90%
Meropenem	2	8	= 0.5	S	8	I	21	I	> 2.0	R	19	I	15	R	8	I	2	S	= 0.38	S	23	R	1	S	30%/40%
Piperacillin/ tazobactam constant 4*	8	8	> 64	R	> 64	R	10	R	> 128	R	6	R	8	R	> 128	R			> 128.0	R	10	R	> 128	R	
Tigecycline	0.5	0.5	= 0.12	S	<= 0.5	S			<= 0.5	S					<= 0.5	S	<= 0.25	S	=	NA	= 0.5	S	<= 0.5	S	
Tobramycin	2	2	= 0.5	S	<= 1	S			<= 1.0	S					<= 1	S			= 1.0	S			<= 1	S	

Probleemsed antibiootikumid:

Meropenem

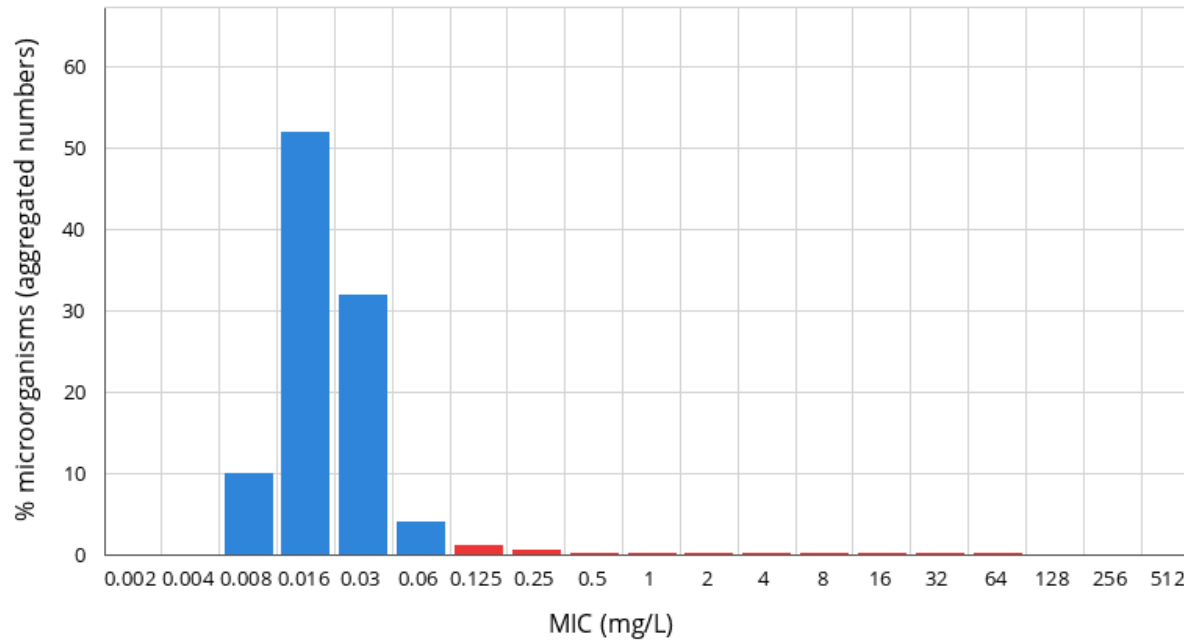
Imipenem

Tseftasidiim

Kolistiin

Meropenem / Escherichia coli
International MIC distribution - Reference database 2022-04-06
Based on aggregated distributions

MIC distributions include collated data from multiple sources, geographical areas and time periods and can never be used to infer rates of resistance



MIC
Epidemiological cut-off (ECOFF): 0.06 mg/L
Wildtype (WT) organisms: ≤ 0.06 mg/L

Confidence interval: 0.03 - 0.06
7496 observations (45 data sources)

EUCAST MEM disk breakpoint: S ≥ 22; R < 16mm (22mm meingit)

Strain EARS-Net 2021 EC.2

Most deviations were observed for ceftazidime, imipenem and meropenem. Carbapenems deviations were reported throughout all methodologies used by the laboratories, and ceftazidime deviations were mainly observed for the Automated system. However, only few AST determinations were reported which prevents conclusions regarding the adequacy of each AST method. While some deviations can be attributed to the method variability, they can also be derived from the differential expression of the *bla*_{OXA-244} gene harboured by the strain, which can confer difficult to detect low levels of carbapenem resistance.

E.coli 3

Antimicrobial	EARS-Net 2021 EC.3***
Amikacin	
Amoxicillin	<i>bla_{VIM-1}</i>
Amoxicillin/clavulanic acid fixed conc	<i>bla_{VIM-1}</i>
Ampicillin	<i>bla_{VIM-1}</i>
Cefepime	<i>bla_{VIM-1}</i>
Cefotaxime	<i>bla_{VIM-1}</i>
Ceftazidime	<i>bla_{VIM-1}</i>
Ceftriaxone	<i>bla_{VIM-1}</i>
Ciprofloxacin	
Colistin	
Ertapenem	<i>bla_{VIM-1}</i>
Gentamicin	
Imipenem	<i>bla_{VIM-1}</i>
Levofloxacin	
Meropenem	<i>bla_{VIM-1}</i>
Moxifloxacin	
Norfloxacin	
Ofloxacin	
Piperacillin/tazobactam constant 4	<i>bla_{VIM-1}</i>
Tigecycline	
Tobramycin	<i>aac(6')-Ib-cr</i>

E.coli 3

Antimicrobial	EUCAST breakpoints (µg/mL)		clinical MIC	EARS-Net 2021 EC3		A		B		C		D		E		F		G		H		I		J			
	S ≤	R >	Expected MIC value (µg/mL)	Expected interpretation	Automated	disk/tablet/MIC	Automated	disk/tablet	disk/tablet	Automated/MIC/disk	MIC-broth	Gradient/MIC/disk	disk/tablet/gradient	Automated/disk/tablet													
Amikacin	8	8	= 1	S	<= 4	S	18	S	<= 2.0	S	19	S	18	S	<= 2	S					= 4.0	S			<= 2	S	
Amoxicillin/ clavulanic acid fixed conc*	8	8	> 128	R	> 32	R	6	R	> 32	R	6	R	6	R							> 256.0	R	6	R	> 32	R	
Ampicillin	8	8	> 32	R	> 8	R			> 32	R									> 64	R	= 6.0	R	6	R	6	R	
Cefepime	1	4	> 32	R	> 16	R	15	R		16	R	14	R	14	R	16	R	32	R		= 48.0	R	13	R	16	R	
Cefotaxime	1	2	> 64	R			6	R	> 64	R	6	R	6	R	> 64	R	> 64	R			> 32.0	R	6	R	> 64	R	
Ceftazidime	1	4	> 128	R	> 16	R	6	R	> 64	R	6	R	6	R	> 64	R	> 128	R			> 256.0	R			> 64	R	
Ceftriaxone	1	2	> 4	R	> 4	R															=	NA			16	R	
Ciprofloxacin	0.25	0.5	= 0.03	S	<= 0.25	S	33	S	<= 0.25	S	35	S	28	S	<= 0.25	S	<= 0.015	S			= 0.008	S	35	S	<= 0.25	S	
Colistin	2	2	<= 0.25	S	<= 1	S	= 0.5	S	<= 0.5	S					= 0.5	S	<= 1	S			= 0.5	S	= 1.5	S	<= 0.5	S	
Ertapenem	0.5	0.5	= 1	R	> 1	R	23	R			22	R	23	R	21	R	= 0.5	S			= 1.5	R	= 0.38	R	22	R	90%/100%
Gentamicin	2	2	= 2	S	4	R	15	R	= 4.0	R	17	S	23	S	4	I	2	S			= 2.0	S	22	S	4	R	50%/90%
Imipenem	2	4	= 8	R	8	R			> 16.0	R	15	R	17	R	> 16	R	8	R			= 12.0	R			> 16	R	
Meropenem	2	8	= 4	I	8	I	23	S	> 16.0	R	20	I	20	I	> 16	R	2	S			= 3.0	I	22	R	> 16	R	40%/50%
Piperacillin/ tazobactam constant 4*	8	8	> 64	R	> 64	R	10	R	> 128	R	9	R	11	R	> 128	R					= 64.0	R	10	R	> 128	R	
Tigecycline	0.5	0.5	= 0.12	S	<= 0.5	S			<= 0.5	S					<= 0.5	S	<= 0.25	S			=	NA	= 0.5	S	<= 0.5	S	
Tobramycin	2	2	= 4	R	> 4	R			= 8.0	R					8	R					= 12.0	R			8	R	

Probleemsed antibiootikumid:

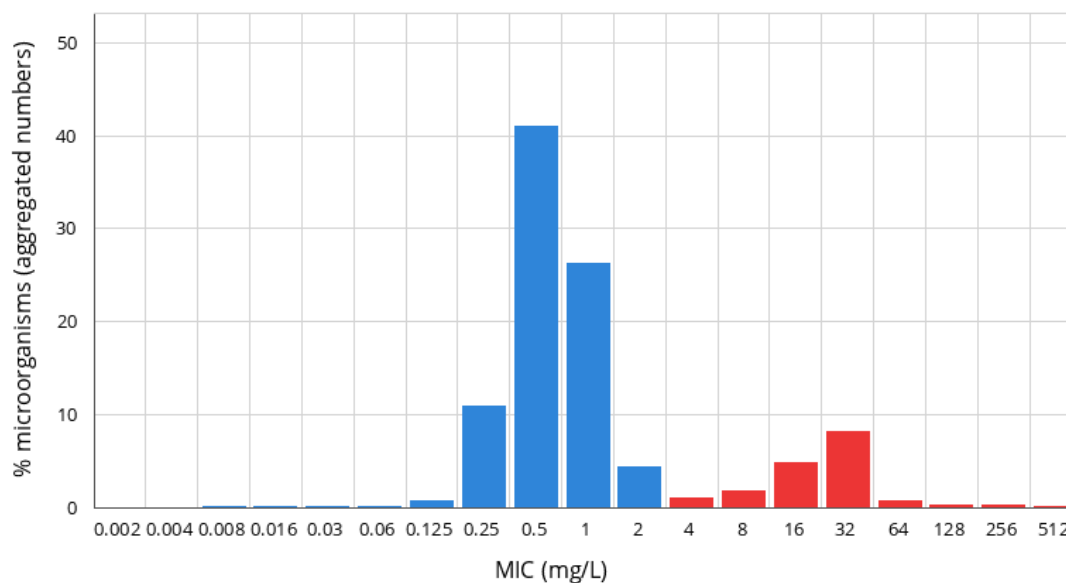
Meropenem

Gentamütsiin

Ertapeneem

Gentamicin / Escherichia coli
International MIC distribution - Reference database 2022-04-06
Based on aggregated distributions

MIC distributions include collated data from multiple sources, geographical areas and time periods and can never be used to infer rates of resistance



MIC
Epidemiological cut-off (ECOFF): 2 mg/L
Wildtype (WT) organisms: ≤ 2 mg/L

Confidence interval: 1 - 2
78136 observations (82 data sources)

EUCAST GN disk breakpoint: S ≥ 17;R<17mm

Strain EARS-Net 2021 EC.3

Most deviations were observed for gentamicin and meropenem. Gentamicin deviations were mainly reported when using the Automated system and seem to be due to the inherent method variability and are in the acceptable variation range. For meropenem, deviations were reported throughout all methodologies used by the laboratories, and while some can be attributed to the method variability, they can also be derived from the differential expression of the *bla*_{VIM-1} gene harboured by the strain.

Antimicrobial	EARS-Net 2021 EC.1*	EARS-Net 2021 EC.2**	EARS-Net 2021 EC.3***
Amikacin			
Amoxicillin	bla _{TEM-1}	bla _{TEM-1}	bla _{VIM-1}
Amoxicillin/clavulanic acid fixed conc		bla _{OXA-244} , bla _{CTX-M-14b}	bla _{VIM-1}
Ampicillin	bla _{TEM-1}	bla _{TEM-1}	bla _{VIM-1}
Cefepime		bla _{OXA-244} , bla _{CTX-M-14b}	bla _{VIM-1}
Cefotaxime		bla _{OXA-244} , bla _{CTX-M-14b}	bla _{VIM-1}
Ceftazidime		bla _{OXA-244} , bla _{CTX-M-14b}	bla _{VIM-1}
Ceftriaxone		bla _{OXA-244} , bla _{CTX-M-14b}	bla _{VIM-1}
Ciprofloxacin	gyrA S83L		
Colistin			
Ertapenem		bla _{OXA-244} , bla _{CTX-M-14b}	bla _{VIM-1}
Gentamicin	aac(3)-IId		
Imipenem			bla _{VIM-1}
Levofloxacin	gyrA S83L		
Meropenem			bla _{VIM-1}
Moxifloxacin	gyrA S83L		
Norfloxacin	gyrA S83L		
Ofloxacin	gyrA S83L		
Piperacillin/tazobactam constant 4		bla _{OXA-244} , bla _{CTX-M-14b}	bla _{VIM-1}
Tigecycline	ND		
Tobramycin	aac(3)-IId		aac(6)-Ib-cr

* Additional resistance genes detected: *sul2*, *dfrA5*, *tet(A)*, *aph(6)-Ib*, *aph(3'')-Ib*,

** Additional resistance genes detected: *catA1*, *sul2*, *drfA1*, *tet(D)*, *aph(3'')-Ib*, *aph(6)-Ib*, *addA1*

***Additional resistance genes detected: *aadA1*, *tet(39)*

	EARS-Net 2021 EC.1		EARS-Net 2021 EC.2		EARS-Net 2021 EC.3	
	Concordance (%)	Number of AST performed	Concordance (%)	Number of AST performed	Concordance (%)	Number of AST performed
Antimicrobial*						
Amikacin	100.0%	8	100.0%	7	100.0%	8
Amoxicillin	100.0%	2	100.0%	1	100.0%	1
Amoxicillin clavulanic acid 2:1 ratio	87.5%	8	100.0%	8	100.0%	8
Ampicillin	100.0%	5	100.0%	6	100.0%	6
Cefepime	100.0%	9	100.0%	10	100.0%	10
Cefotaxime	100.0%	9	100.0%	9	100.0%	9
Ceftazidime	100.0%	8	77.8%	9	100.0%	9
Ceftriaxone	100.0%	2	100.0%	2	100.0%	2
Ciprofloxacin	20.0%	10	100.0%	10	100.0%	10
Colistin	100.0%	6	87.5%	8	100.0%	8
Ertapenem	100.0%	10	100.0%	10	88.9%	9
Gentamicin	100.0%	9	100.0%	10	50.0%	10
Imipenem	100.0%	8	62.5%	8	100.0%	8
Levofloxacin	100.0%	1	100.0%	1	100.0%	2
Meropenem	100.0%	10	30.0%	10	40.0%	10
Moxifloxacin	100.0%	1	100.0%	1	100.0%	1
Piperacillin – tazobactam constant 4	100.0%	9	100.0%	9	100.0%	9
Tigecycline	80.0%	5	100.0%	6	100.0%	6
Tobramycin	100.0%	5	100.0%	5	100.0%	5
Estonia Total	92.0%	125	90.0%	130	90.8%	131

K.pneumoniae 1

Antimicrobial	EARS-Net 2021 KPN.1*
Amikacin	<i>rmtB, aac(6')-Ib-cr</i>
Amoxicillin/clavulanic acid fixed conc	<i>bla_{OXA-181}/bla_{OXA-1}, bla_{NDM-5}, bla_{SHV-26}</i>
Cefepime	<i>bla_{OXA-181}/bla_{OXA-1}, bla_{NDM-5}, bla_{CTX-M-15}</i>
Cefotaxime	<i>bla_{NDM-5}, bla_{CTX-M-15}</i>
Ceftazidime	<i>bla_{NDM-5}, bla_{CTX-M-15}</i>
Ceftriaxone	<i>bla_{CTX-M-15}</i>
Ciprofloxacin	<i>aac(6')-Ib-cr, qnrS1, gyrA S83F, gyrA D87N, parC E84K</i>
Colistin	ND
Ertapenem	<i>bla_{OXA-181}, bla_{NDM-5}</i>
Gentamicin	<i>rmtB</i>
Imipenem	<i>bla_{OXA-181}, bla_{NDM-5}</i>
Levofloxacin	<i>aac(6')-Ib-cr, qnrS1, gyrA S83F, gyrA D87N, parC E84K</i>
Meropenem	<i>bla_{OXA-181}, bla_{NDM-5}</i>
Moxifloxacin	<i>aac(6')-Ib-cr, qnrS1, gyrA S83F, gyrA D87N, parC E84K</i>
Norfloxacin	<i>aac(6')-Ib-cr, qnrS1, gyrA S83F, gyrA D87N, parC E84K</i>
Ofloxacin	<i>aac(6')-Ib-cr, qnrS1, gyrA S83F, gyrA D87N, parC E84K</i>
Piperacillin – tazobactam constant 4	<i>bla_{OXA-181}/bla_{OXA-1}, bla_{NDM-5}, bla_{SHV-26}</i>
Tobramycin	<i>rmtB, aac(6')-Ib-cr</i>

K.pneumoniae 1

Antimicrobial	EUCAST clinical breakpoints MIC (µg/mL)		EARS-Net 2021 KPN.1		A		B		C		D		E		F		G		H		I		J	
	S ≤	R >	Expected MIC value (µg/mL)	Expected interpretation	Automated	disk/tablet/MIC	Automated	disk/tablet	Automated	disk/tablet	Automated	disk/tablet	Automated	disk/tablet	Automated/MIC/disk	MIC-broth	Gradient/MIC/disk	disk/tablet/gradient	Automated/disk/tablet	disk/tablet/gradient	Automated/disk/tablet	disk/tablet/gradient	Automated/disk/tablet	
Amikacin	8	8	> 128	R	> 16	R	6 R	> 64	R	6 R	6 R	> 64	R			> 256	R			> 64	R			
Amoxicillin/ clavulanic acid fixed conc*	8	8	> 128	R	> 32	R	6 R	> 32	R	6 R	6 R					> 256	R	6 R		> 32	R			
Cefepime	1	4	> 32	R	> 16	R	13 R	> 32	R	12 R	12 R	> 32	R	32 R	32 R	32 R	32 R	14 R		> 32	R			
Cefotaxime	1	2	> 64	R			6 R	> 64	R	6 R	6 R	> 64	R	> 64	R	> 32	R	6 R		> 64	R			
Ceftazidime	1	4	= 128	R	> 16	R	6 R	> 64	R	6 R	6 R	> 64	R	> 128	R	> 32	R			> 64	R			
Ceftriaxone	1	2	> 4	R	> 4	R										=	NA			> 64	R			
Ciprofloxacin	0.25	0.5	> 8	R	> 1	R	6 R	> 4.0	R	6 R	6 R	> 4	R	> 8	R	> 32	R	6 R		> 4	R			
Colistin	2	2	> 32	R	> 4	R	32 R	> 16	R			> 16	R	> 16	R	> 16	R	2 S		> 16	R		90%	
Ertapenem	0.5	0.5	> 8	R	> 1	R	11 R	> 8.0	R	10 R	10 R	10 R	> 2	R	16 R	16 R	16 R	32 R		> 16	R			
Gentamicin	2	2	> 16	R	> 4	R	6 R	> 16	R	6 R	6 R	> 16	R	> 32	R	> 256	R	6 R		> 16	R			
Imipenem	2	4	= 16	R	> 8	R		= 8.0	R	14 R	16 R	> 16	R	16 R	16 R	4 R	4 R			> 16	R			
Levofloxacin	0.5	1	> 8	R	> 2	R										=	NA							
Meropenem	2	8	> 16	R	> 8	R	14 R	> 16	R	13 R	12 R	> 16	R	16 R	16 R	3 I	3 I	14 R		> 16	R		90%	
Piperacillin/ tazobactam constant 4*	8	8	> 64	R	> 64	R	6 R	> 128	R	6 R	6 R	> 128	R			> 128	R	6 R		> 128	R			
Tobramycin	2	2	> 16	R	> 4	R		> 16	R			> 16	R			> 1024	R			> 16	R			

Problemsed antibiotikumid:

Kolistiin

Meropenem

Strain EARS-Net 2021 KPN.1

There were few discordances with the expected results.

K.pneumoniae 2

Antimicrobial	EARS-Net KPN.2**	2021
Amikacin		
Amoxicillin/clavulanic acid fixed conc	<i>bla_{SHV-110}, bla_{CMY-2}</i>	
Cefepime	<i>bla_{CMY-2}</i>	
Cefotaxime	<i>bla_{CMY-2}</i>	
Ceftazidime	<i>bla_{CMY-2}</i>	
Ceftriaxone	<i>bla_{CMY-2}</i>	
Ciprofloxacin		
Colistin		
Ertapenem	<i>bla_{CMY-2}</i>	
Gentamicin		
Imipenem	<i>bla_{CMY-2}</i>	
Levofloxacin		
Meropenem		
Moxifloxacin		
Norfloxacin		
Ofloxacin		
Piperacillin tazobactam constant 4	<i>bla_{SHV-110}, bla_{CMY-2}</i>	
Tobramycin		

K.pneumoniae 2

Antimicrobial	EUCAST clinical breakpoints MIC (µg/mL)		EARS-Net 2021 KPN.2		A		B		C		D		E		F		G		H		I		J		
	S ≤	R >	Expected MIC value	Expected interpret	Automated	disk/tablet/MIC	Automated	disk/tablet	Automated	disk/tablet	Automated	disk/tablet	Automated	MIC/disk	MIC-broth	Gradient/MIC/disk	disk/tablet/gradient	Automated/disk/tablet	Automated/disk/tablet	Automated/disk/tablet	Automated/disk/tablet	Automated/disk/tablet	Automated/disk/tablet	Automated/disk/tablet	
Amikacin	8	8	= 1	S	<= 4	S	18	S	<= 2.0	S	20	S	18	S	<= 2	S			3	S			<= 2	S	
Amoxicillin/ clavulanic acid fixed conc*	8	8	> 128	R	> 32	R	6	R	> 32	R	8	R	6	R					> 256	R	8	R	> 32	R	
Cefepime	1	4	= 8	R	8	R	18	R	= 2.0	I	17	R	19	R	8	R	8	R	6	R	20	R	2	I	80%
Cefotaxime	1	2	> 64	R			6	R	> 64	R	6	R	6	R	> 64	R	> 64	R	> 32	R	6	R	> 64	R	
Ceftazidime	1	4	= 64	R	> 16	R	6	R	> 64	R	6	R	6	R	> 64	R	128	R	> 256	R			> 64	R	
Ceftriaxone	1	2	> 4	R	> 4	R													=	NA			> 64	R	
Ciprofloxacin	0.25	0.5	= 0.06	S	<= 0.25	S	25	S	<= 0.25	S	31	S	26	S	<= 0.25	S	= 0.06	S	= 0.047	S	27	S	<= 0.25	S	
Colistin	2	2	<= 0.2	S	<= 1	S	8	R	<= 0.5	S							<= 1	S	1	S	1	S	<= 0.5	S	90%
Ertapenem	0.5	0.5	= 4	R	> 1	R	13	R	= 1.0	R	12	R	14	R	16	R	2	R	6	R	3	R	16	R	
Gentamicin	2	2	<= 0.2	S	<= 1	S	17	S	<= 1.0	S	18	S	17	S	<= 1	S	<= 0.5	S	= 0.75	S	25	S	<= 1	S	
Imipenem	2	4	= 4	I	> 8	R			= 1.0	S	18	I	19	I	2	S	8	R	4	I			2	S	50%/70%
Levofloxacin	0.5	1	= 0.1	S	<= 0.5	S									<= 0.5	S			=	NA					
Meropenem	2	8	= 1	S	4	I	22	S	= 1.0	S	25	S	18	I	1	S	2	S	= 1.5	S	23	S	1	S	80%/90%
Piperacillin/ tazobactam constant 4*	8	8	> 64	R	> 64	R	10	R	> 128	R	9	R	10	R	> 128	R			32	R	14	R	> 128	R	
Tobramycin	2	2	= 0.5	S	<= 1	S			<= 1.0	S					<= 1	S			2	S			<= 1	S	

Probleemsed antibiotikumid:

Imipeneem

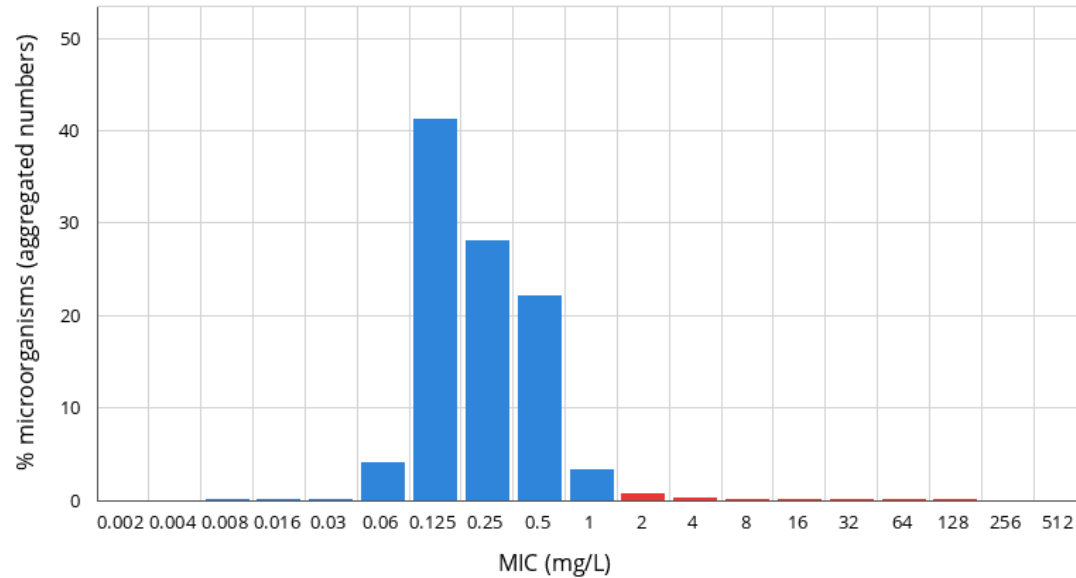
Meropeneem

Tsefepiim

Kolistiin

Imipenem / *Klebsiella pneumoniae*
International MIC distribution - Reference database 2022-04-06
Based on aggregated distributions

MIC distributions include collated data from multiple sources, geographical areas and time periods and can never be used to infer rates of resistance



MIC
Epidemiological cut-off (ECOFF): 1 mg/L
Wildtype (WT) organisms: ≤ 1 mg/L

Confidence interval: -
29000 observations (45 data sources)

EUCAST IPM disk breakpoint: S ≥ 22; R < 19mm

Strain EARS-Net 2021 KPN.2

Most deviations were observed for imipenem and meropenem, and mainly reported when using the Automated system. While some can be attributed to the inherent method variability and are in the acceptable variation range, they can also be derived from the differential expression of the *bla*_{CMY-2} gene harboured by the strain. It has additionally been observed that, in some cases, the *bla*_{CMY-2} gene can be accompanied by reduced outer membrane permeability mediated by decreased porin expression, which can raise the difficulty of proper AST determination.

K.pneumoniae 3

Antimicrobial	EARS-Net 2021 KPN.3***
Amikacin	<i>armA, aac(6')-Ib-cr</i>
Amoxicillin/clavulanic acid fixed conc	<i>bla_{TEM-1B}, bla_{SHV-11}, bla_{OXA-1}, bla_{CTX-M-15}</i>
Cefepime	<i>bla_{OXA-1}, bla_{CTX-M-15}</i>
Cefotaxime	<i>bla_{CTX-M-15}</i>
Ceftazidime	<i>bla_{CTX-M-15}</i>
Ceftriaxone	<i>bla_{CTX-M-15}</i>
Ciprofloxacin	<i>aac(6')-Ib-cr, qnrB1, gyrA D87A, parC S80I</i>
Colistin	
Ertapenem	<i>bla_{CTX-M-15}</i>
Gentamicin	<i>armA</i>
Imipenem	
Levofloxacin	<i>aac(6')-Ib-cr, qnrB1, gyrA D87A, parC S80I</i>
Meropenem	
Moxifloxacin	<i>aac(6')-Ib-cr, qnrB1, gyrA D87A, parC S80I</i>
Norfloxacin	<i>aac(6')-Ib-cr, qnrB1, gyrA D87A, parC S80I</i>
Ofloxacin	<i>aac(6')-Ib-cr, qnrB1, gyrA D87A, parC S80I</i>
Piperacillin-tazobactam constant 4	<i>bla_{TEM-1B}, bla_{SHV-11}, bla_{OXA-1}, bla_{CTX-M-15}</i>
Tobramycin	<i>armA, aac(6')-Ib-cr</i>

K.pneumoniae 3

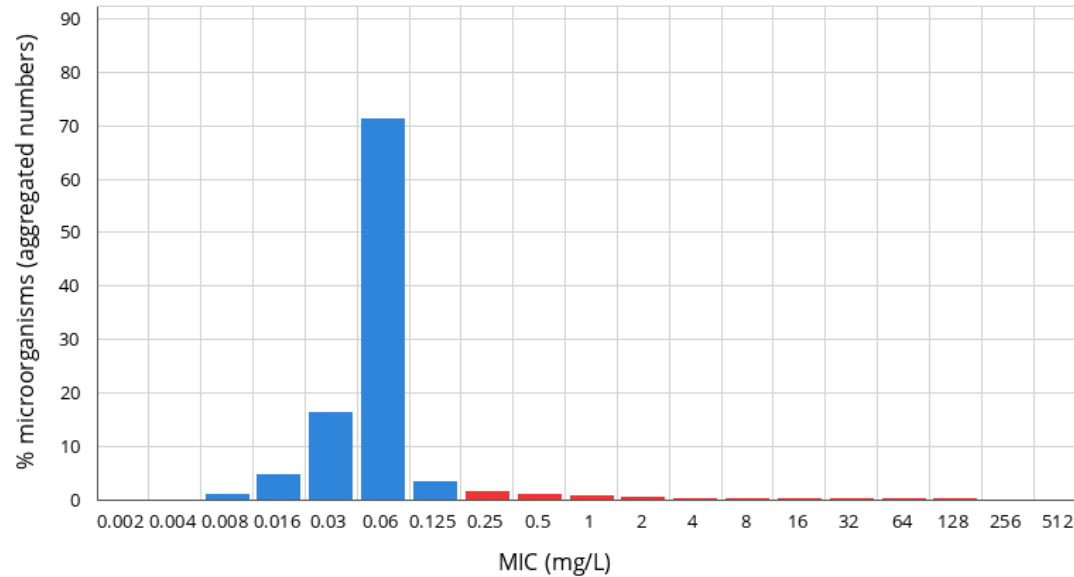
Antimicrobial	EUCAST clinical breakpoints (µg/ml)		EARS-Net 2021 KPN.3		A		B		C		D		E		F		G		H		I		J		
	S ≤	R >	Expected MIC value (µg/mL)	Expected interpret	Automated	disk/tablet/MIC	Automated	disk/tablet	Automated	disk/tablet	Automated	disk/tablet	Automated	disk/tablet	Automated	MIC-broth	Gradient/MIC/disk	disk/tablet/gradient	Automated/disk/tablet	Automated	disk/tablet	Automated	disk/tablet		
Amikacin	8	8	> 128	R	> 16	R	6	R	> 64	R	6	R	6	R	> 64	R			> 256	R			> 64	R	
Amoxicillin/clavulanic acid fixed	8	8	> 128	R	> 32	R	12	R	> 32	R	10	R	12	R					> 256	R	12	R	> 32	R	
Cefepime	1	4	> 32	R	> 16	R	6	R	> 32	R	6	R	6	R	> 32	R	> 32	R	> 256	R	6	R	> 32	R	
Cefotaxime	1	2	> 64	R			6	R	> 64	R	6	R	6	R	> 64	R	> 64	R	> 32	R	6	R	> 64	R	
Ceftazidime	1	4	> 128	R	> 16	R	6	R	> 64	R	6	R	6	R	> 64	R	> 128	R	> 256	R			> 64	R	
Ceftriaxone	1	2	> 4	R	> 4	R													=	NA			> 64	R	
Ciprofloxacin	0.25	0.5	> 8	R	> 1	R	6	R	> 4.0	R	6	R	6	R	> 4	R	> 8	R	> 32	R	6	R	> 4	R	
Colistin	2	2	<= 0.25	S	<= 1	S	0.5	S	<= 0.5	S					= 0.5	S	<= 1	S	1	S	1	S	<= 0.5	S	
Ertapenem	0.5	0.5	> 4	R	> 1	R	14	R	> 8.0	R	10	R	13	R	12	R	> 2	R	12	R	8	R	15	R	
Gentamicin	2	2	> 16	R	> 4	R	6	R	> 16.0	R	6	R	6	R	> 16	R	> 32	R	> 256	R	6	R	> 16	R	
Imipenem	2	4	= 0.25	S	<= 0.25	S			<= 0.25	S	28	S	28	S	<= 0.25	S	= 0.5	S	= 0.5	S			<= 0.25	S	
Levofloxacin	0.5	1	> 8	R	> 2	R									4	R			=	NA					
Meropenem	2	8	= 2	S	4	I	22	S	= 2.0	S	22	S	20	I	2	S	4	I	2	S	23	S	2	S	70%/90%
Piperacillin/tazobactam constant 4*	8	8	> 64	R	> 64	R	9	R	> 128	R	6	R	9	R	> 128	R			> 128	R	10	R	> 128	R	
Tobramycin	2	2	> 16	R	> 4	R			> 16	R					> 16	R			> 1024	R			> 16	R	

Probleemse antibiotikumid:

Meropenem

Meropenem / *Klebsiella pneumoniae*
International MIC distribution - Reference database 2022-04-06
Based on aggregated distributions

MIC distributions include collated data from multiple sources, geographical areas and time periods and can never be used to infer rates of resistance



MIC
Epidemiological cut-off (ECOFF): 0.125 mg/L
Wildtype (WT) organisms: ≤ 0.125 mg/L

Confidence interval: 0.03 - 0.125
15755 observations (14 data sources)

**EUCAST MEM disk breakpoint: S ≥ 22; R < 16mm
(22mm meingiit)**

Strain EARS-Net 2021 KPN.3

Most deviations were observed for meropenem and reported throughout all methodologies used by the laboratories. These seem to be due to the inherent method variability and are in the acceptable variation range.

Antimicrobial	EARS-Net 2021 KPN.1*	EARS-Net 2021 KPN.2**	EARS-Net 2021 KPN.3***
Amikacin	rmtB, aac(6')-Ib-cr		armA, aac(6')-Ib-cr
Amoxicillin/clavulanic acid fixed conc	bla _{OXA-181} /bla _{OXA-1} , bla _{NDM-5} , bla _{SHV-26}	bla _{SHV-110} , bla _{CMY-2}	bla _{TEM-1B} , bla _{SHV-11} , bla _{OXA-1} , bla _{CTX-M-15}
Cefepime	bla _{OXA-181} /bla _{OXA-1} , bla _{NDM-5} , bla _{CTX-M-15}	bla _{CMY-2}	bla _{OXA-1} , bla _{CTX-M-15}
Cefotaxime	bla _{NDM-5} , bla _{CTX-M-15}	bla _{CMY-2}	bla _{CTX-M-15}
Ceftazidime	bla _{NDM-5} , bla _{CTX-M-15}	bla _{CMY-2}	bla _{CTX-M-15}
Ceftriaxone	bla _{CTX-M-15}	bla _{CMY-2}	bla _{CTX-M-15}
Ciprofloxacin	aac(6')-Ib-cr, qnrS1, gyrA S83F, gyrA D87N, parC E84K		aac(6')-Ib-cr, qnrB1, gyrA D87A, parC S80I
Colistin	ND		
Ertapenem	bla _{OXA-181} , bla _{NDM-5}	bla _{CMY-2}	bla _{CTX-M-15}
Gentamicin	rmtB		armA
Imipenem	bla _{OXA-181} , bla _{NDM-5}	bla _{CMY-2}	
Levofloxacin	aac(6')-Ib-cr, qnrS1, gyrA S83F, gyrA D87N, parC E84K		aac(6')-Ib-cr, qnrB1, gyrA D87A, parC S80I
Meropenem	bla _{OXA-181} , bla _{NDM-5}		
Moxifloxacin	aac(6')-Ib-cr, qnrS1, gyrA S83F, gyrA D87N, parC E84K		aac(6')-Ib-cr, qnrB1, gyrA D87A, parC S80I
Norfloxacin	aac(6')-Ib-cr, qnrS1, gyrA S83F, gyrA D87N, parC E84K		aac(6')-Ib-cr, qnrB1, gyrA D87A, parC S80I
Ofloxacin	aac(6')-Ib-cr, qnrS1, gyrA S83F, gyrA D87N, parC E84K		aac(6')-Ib-cr, qnrB1, gyrA D87A, parC S80I
Piperacillin – tazobactam constant 4	bla _{OXA-181} /bla _{OXA-1} , bla _{NDM-5} , bla _{SHV-26}	bla _{SHV-110} , bla _{CMY-2}	bla _{TEM-1B} , bla _{SHV-11} , bla _{OXA-1} , bla _{CTX-M-15}
Tobramycin	rmtB, aac(6')-Ib-cr		armA, aac(6')-Ib-cr

*Additional resistance genes detected: *erm(B)*, *bla_{TEM-1B}*, *sul1*, *oqxA*, *oqxB*, *dfrA12*, *mph(A)*, *qacE*, *aadA2*, *tet(A)*, *fosA5*, *catB3*, *aph(3')-Ia*

**Additional resistance genes detected: *fosA*, *cmlA1*, *catA2*, *aadA2*, *sul1*, *sul2*, *dfrA15*, *oqxA*, *oqxB*, *qacE*

***Additional resistance genes detected: *aadA1*, *fosA*, *oqxA*, *oqxB*, *qacE*, *sul1*, *sul2*, *arr-2*, *cmlA1*, *catB3*, *aph(6)-Ic*, *aph(3'')-Ib*, *ere(A)*, *mphE*, *msrE*, *erm(B)*, *mph(A)*

	EARS-Net 2021 KPN.1		EARS-Net 2021 KPN.2		EARS-Net 2021 KPN.3	
	Concordance (%)	Number of AST performed	Concordance (%)	Number of AST performed	Concordance (%)	Number of AST performed
Antimicrobial*						
Amikacin	100.0%	8	100.0%	8	100.0%	8
Amoxicillin clavulanic acid 2:1 ratio	100.0%	8	100.0%	8	100.0%	8
Cefepime	100.0%	10	80.0%	10	100.0%	10
Cefotaxime	100.0%	9	100.0%	9	100.0%	9
Ceftazidime	100.0%	9	100.0%	9	100.0%	9
Ceftriaxone	100.0%	2	100.0%	2	100.0%	2
Ciprofloxacin	100.0%	10	100.0%	10	100.0%	10
Colistin	87.5%	8	85.7%	7	100.0%	8
Ertapenem	100.0%	10	100.0%	10	100.0%	10
Gentamicin	100.0%	10	100.0%	10	100.0%	10
Imipenem	100.0%	8	37.5%	8	100.0%	8
Levofloxacin	100.0%	1	100.0%	2	100.0%	2
Meropenem	90.0%	10	80.0%	10	70.0%	10
Moxifloxacin	100.0%	1	100.0%	1	100.0%	1
Piperacillin – tazobactam constant 4	100.0%	9	100.0%	9	100.0%	9
Tobramycin	100.0%	5	100.0%	5	100.0%	5
Estonia Total	98.3%	118	91.5%	118	97.5%	119

Täname tähelepanu eest!
