Antibiotics susceptibility patterns in hospitalized patients with advanced HIV in Bihar, India.

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Background

Antibiotic resistance is a major threat to public health, particularly in India.

The emergence of multidrug-resistant bacterial infections in severely immunompromised HIV patients limits treatment options and challenges clinical management.

Frequent bacterial infections and unnecessary antibiotic cycling in acutely unwell HIV patients promote resistance and increase mortality.

This study describes bacterial isolates and resistance patterns in acutely unwell patients with advanced HIV admitted to a specialist advanced HIV ward in Bihar state, India.

Methods

This is a retrospective description of cultures reports in patients admitted between February 2019 to January 2020 to specialist advanced HIV ward in Bihar state, India

Data on culture result (positive growth or no growth) of any kind of specimen including urine, blood, swabs, pus, cerebrospinal fluid (CSF) was included.

All samples were sent to an external NABL accredited laboratory for culture and antibiotic susceptibility testing.

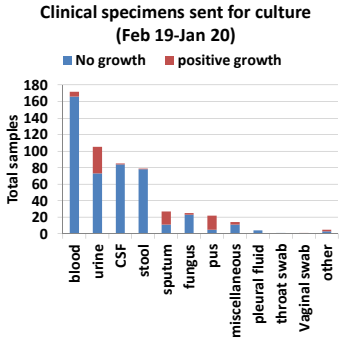
No differentiation was made between hospitals or community acquired infections.

Results

- Total Sample sent for culture = **540** (of 210 patients)
- Median (IQR) number of culture test per patient= **2 (1,3)**
- Growth positivity/sample = 81/540 (15 %)
- Growth positivity/patient = 52/210 (24.8%)
- Median (IQR) delay between sample collection and test results = 4 (3,6) days
- Resistance: **S**=8.5%, **R**=3.4%, **MDR**=37.3% , **XDR**=47.5% and **PDR**=3.4%

conclusion

The study highlights the high rates of multi-drug resistance to commonly use antibiotics in bacterial isolates from advanced HIV patients. In line with the MSF ABR task force strategy, hospital-based antibiograms should be used by MSF clinicians to assess local susceptibility rates as an aid in selecting empiric antibiotic therapy, and in monitoring resistance trends over time. More data is needed from similar projects to adapt protocols and model of care.



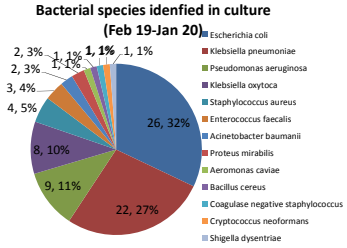


Table 1: Antibiogram showing antibiotic susceptibility testing results of microorganism to common antibiotics.

Antibiotic class	Antibiotics (In blue-WHO list of essential medicines)	Escherichia coli		Klebsiella pneumoniae		Klebsiella oxytoca		Pseudomonas aeruginosa	
		N	R+I %	N	R+I %	N	R+I %	N	R+I %
Aminoglycosides	Gentamicin	26	50.0%	22	54.5%	8	50.0%	9	44.4%
	Tobramycin	17	41.2%	13	61.5%	8	62.5%	2	0.0%
	Amikacin	26	19.2%	22	50.0%	8	0.0%	9	44.4%
	Netilmicin	10	20.0%	4	75.0%	5	0.0%		
Carbapenems and other penems	Imipenem	26	50.0%	22	63.6%	8	75.0%	9	44.4%
	Ertapenem	13	38.5%	14	57.1%				
	Meropenem	26	50.0%	21	61.9%	8	50.0%	9	44.4%
	Doripenem	1	100.0%	1	0.0%			9	44.4%
Cephalosporins (1st and 2nd generation) and cephamycins	Cefuroxime	25	96.0%	22	95.5%	8	100.0%		
	Cefazolin	1	100.0%	1	100.0%				
Cephalosporins (3rd, 4th and 5th generation)	Ampicillin+Sulbactam	17	94.1%	14	92.9%	8	100.0%		
	Cefepime	26	92.3%	21	76.2%	8	100.0%	9	44.4%
	Ceftriaxone	26	96.2%	22	86.4%	8	100.0%		
	Cefixime	23	95.7%	16	81.3%	8	100.0%		
	Cefoperazone/Sulbactam	23	73.9%	16	68.8%	7	71.4%		
	Ceftazidime	1	100.0%	1	100.0%			9	33.3%
	Cefotaxime	1	100.0%	1	100.0%	1	100.0%		
Penicillins	Amoxacillin clavulanic acid	26	92.3%	22	95.5%	8	100.0%		
	Ampicillin	13	100.0%	1	100.0%				
	Piperacillin tazobactam	26	73.1%	22	72.7%	8	100.0%	9	44.4%
	Ticarcillin -Clavulanate	1	100.0%	1	100.0%			1	0.0%
Quinolones and fluoroquinolones	Ciprofloxacin	26	92.3%	22	77.3%	8	100.0%	9	66.7%
	Levofloxacin	20	90.0%	13	84.6%	8	100.0%	9	66.7%
	Norfloxacin	13	100.0%	8	87.5%	8	100.0%		
	Ofloxacin	13	100.0%	8	75.0%	8	100.0%		
Sulfonamides, dihydrofolate reductase inhibitors and combinations	co-trimaxazole	23	91.3%	18	83.3%	5	80.0%		
Tetracyclines	Doxicycline	13	76.9%	9	66.7%	8	87.5%		
Polymyxins	Colistin	13	0.0%	14	14.3%			9	0.0%
Amphenicols	Chloramphenicol	3	0.0%	2	50.0%				
Monobactams	Aztreonam	20	95.0%	13	92.3%	8	100.0%	8	37.5%
Glycylcyclines	Tigecycline	3	0.0%	4	25.0%				
Nitrofurans derivatives	Nitrofurantoine	13	53.8%	8	87.5%	8	62.5%		

Acknowledgements

We express our gratitude to the entire MSF field team for their support