

## Summary of AMR Report 2018

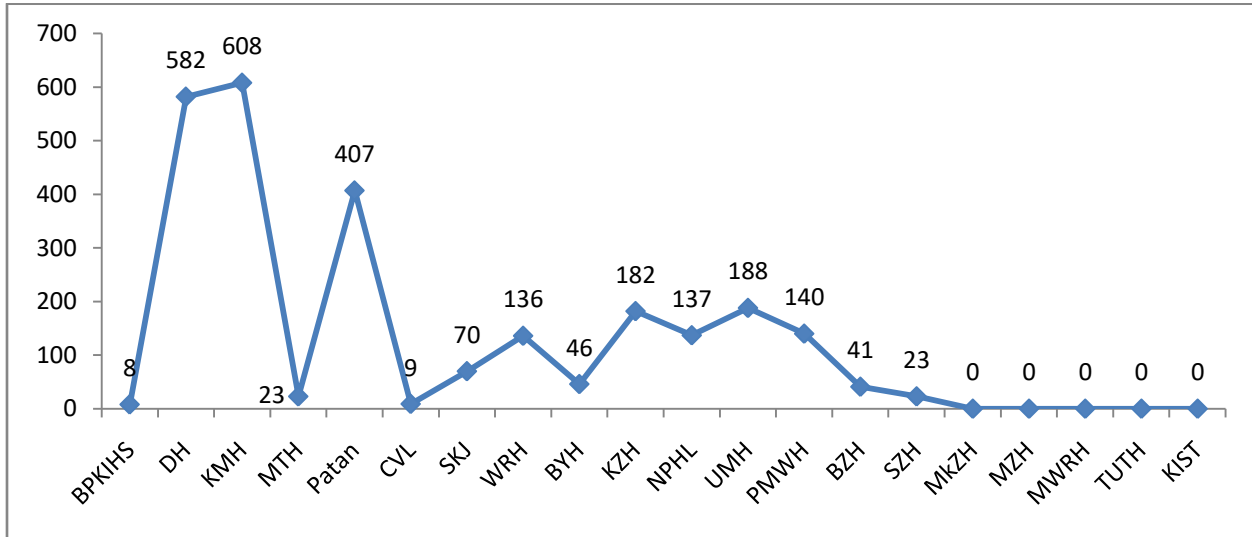
A total of 2600 isolates of surveillance interest were reported in the year 2018. Of the total isolates reported in 2018, the most common organism was **Methicillin Resistant *Staphylococcus aureus*** (751, 28.8%), followed by ESBL *E. coli* (657,25.2%), ***Salmonella*** (463, 17.8%) , **MDR *Klebsiella***isolates(344, 13.3%), **MDR *Acinetobacter***spp (220,8.4%) . Similarly, 80 isolates of ***Streptococcus pneumoniae*** (3.1%), 46 isolates of ***Neisseria gonorrhoea***(1.7%),29 ***Shigella*** isolates (1.1%),8 isolates of ***Haemophilus influenzae*** (0.31%) and only 2 isolates of *Vibrio cholerae* were reported from AMR participating laboratories.

**Table 1: Month-wise distribution of the reported isolates, 2018 (N=2600 )**

Month	<i>Salmonella</i>	<i>Shigella</i>	<i>V. cholerae</i>	<i>S. pneumoniae</i>	<i>H. influenzae</i>	<i>N. gonorrhoeae</i>	ESBL <i>E. coli</i>	MDR <i>Klebsiella</i>	MDR <i>Acinetobacter</i>	MRSA	Total
January	44	2	0	14	3	5	97	32	16	97	<b>310</b>
February	47	1	0	6	0	7	37	29	20	60	<b>207</b>
March	57	1	0	0	0	5	47	19	10	39	<b>178</b>
April	66	2	0	6	0	4	43	16	18	71	<b>226</b>
May	51	7	0	2	0	7	37	20	9	25	<b>158</b>
June	22	9	2	3	0	2	40	28	10	48	<b>164</b>
July	29	0	0	2	0	1	81	34	25	46	<b>218</b>
August	31	0	0	9	0	5	69	29	19	55	<b>217</b>
September	52	2	0	13	0	3	60	35	26	95	<b>286</b>
October	30	2	0	8	3	4	58	44	14	92	<b>255</b>
November	20	2	0	9	1	2	52	30	28	77	<b>221</b>
December	14	1	0	8	1	1	36	28	25	46	<b>160</b>
<b>Total</b>	<b>463</b>	<b>29</b>	<b>2</b>	<b>80</b>	<b>8</b>	<b>46</b>	<b>657</b>	<b>344</b>	<b>220</b>	<b>751</b>	<b>2600</b>

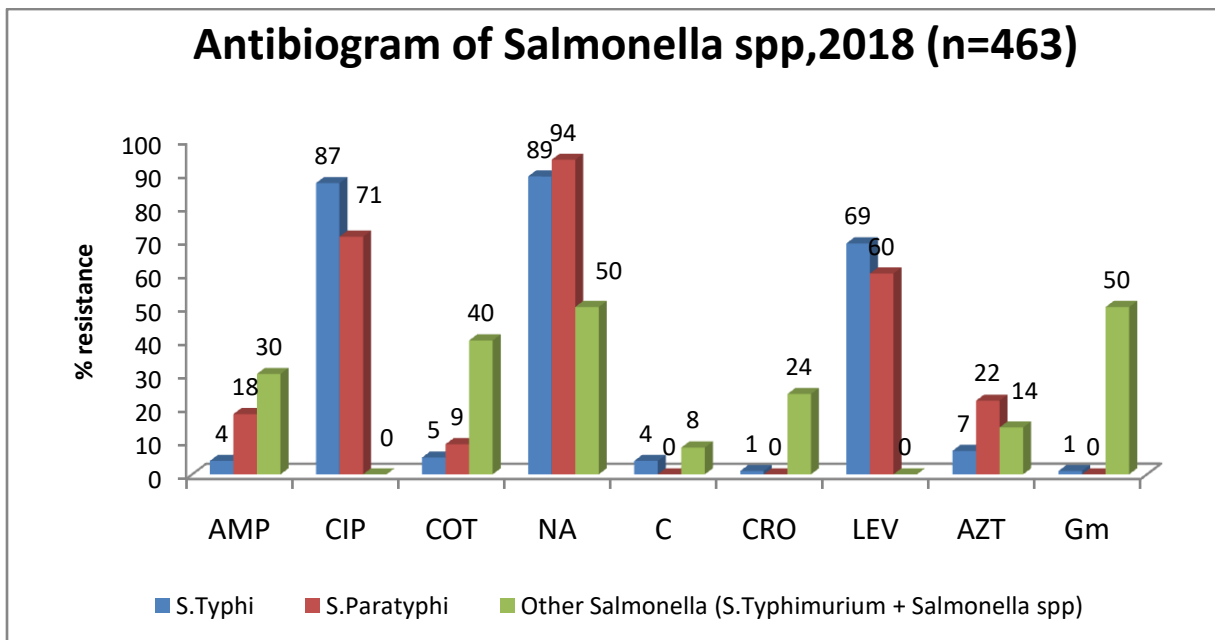
Majority of the isolates were reported from Kathmandu Model hospital (23% of the total isolates).

**Hospital-wise distribution of the reported isolates, 2018 (N=2600 )**



**1.1 SALMONELLA**

Among the *Salmonella* isolates reported in 2018, 400 (80%) were *S. Typhi* , 39 isolates (15%)were *S. Paratyphi A*, 3 isolates (1%) was *S.Typhimurium*and 20 (4%) isolate was other *Salmonellaspecies*. Of them, 9 isolates of *Salmonellaspp* isolated from liver of animals was reported from Central veterinary Laboratory.



## 1.2 SHIGELLA

A total of 29 *Shigella* isolates were reported in the year 2018 all from stool sample, 59 % isolates were reported as *Shigella* spp, followed by *S.flexneri*(21%), *S.dysenteriae*(7%) and *S.sonnei* (14% each). Patients of 1-9 yrs age group patients showed high infection (but only 40% cases reported has age and sex data)

	% resistance						
	AMP	CIP	COT	ofx	CRO	NA	TET
<i>S.dysenteriae</i>	100	100	50	0	100	0	0
<i>S.flexneri</i>	33.3	40	75	50	0	100	0
<i>S.sonnei</i>	25	100	100	100	0	0	0
Shigella spp	56.2	20	58.3	25	0	71.2	61.5
Total Shigella	50	42.3	68.2	53.8	4.1	75	57.1

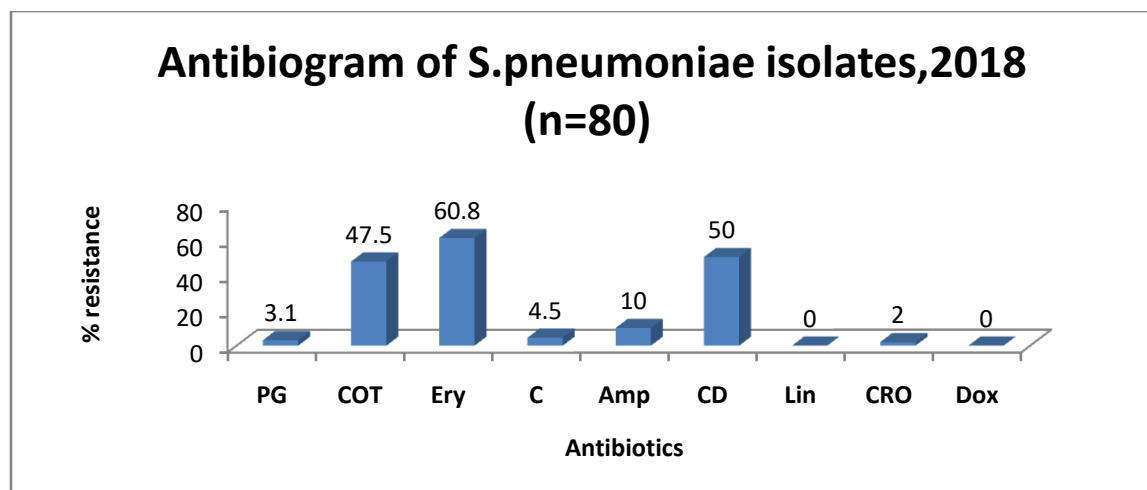
31% (9/29) of the *Shigella* isolates were MDR exhibiting resistance to 3 or more classes of antibiotics. All the isolates were sensitive to Chloramphenicol, Gentamicin and Cefixime.

## 1.3 VIBRIO CHOLERAEE:

Only 2 isolates of *Vibrio cholerae* were confirmed at NPHL. Both the isolates were received from Sukraraj Tropical and Infectious disease hospital and were of Classical biotype, O1 serogroup, Ogawa serotype. All isolates were resistant to amoxicillin, Cotrimoxazole and nalidixic acid, susceptible to ciprofloxacin, tetracycline and partially susceptible to Chloramphenicol. One isolate was resistant to both Ceftriaxone and Cefixime while the other was susceptible.

## 1.4 *Streptococcus pneumoniae*:

A total of 80 *Streptococcus pneumoniae* isolates were reported in 2018. Majority of isolates were recovered from sputum (70%) followed by blood, eye swab, pus, semen and urine and fluid. Most of the cases were reported from 60 years above age group in both sexes.



#### **1.5 HAEMOPHILUS INFLUENZAE:**

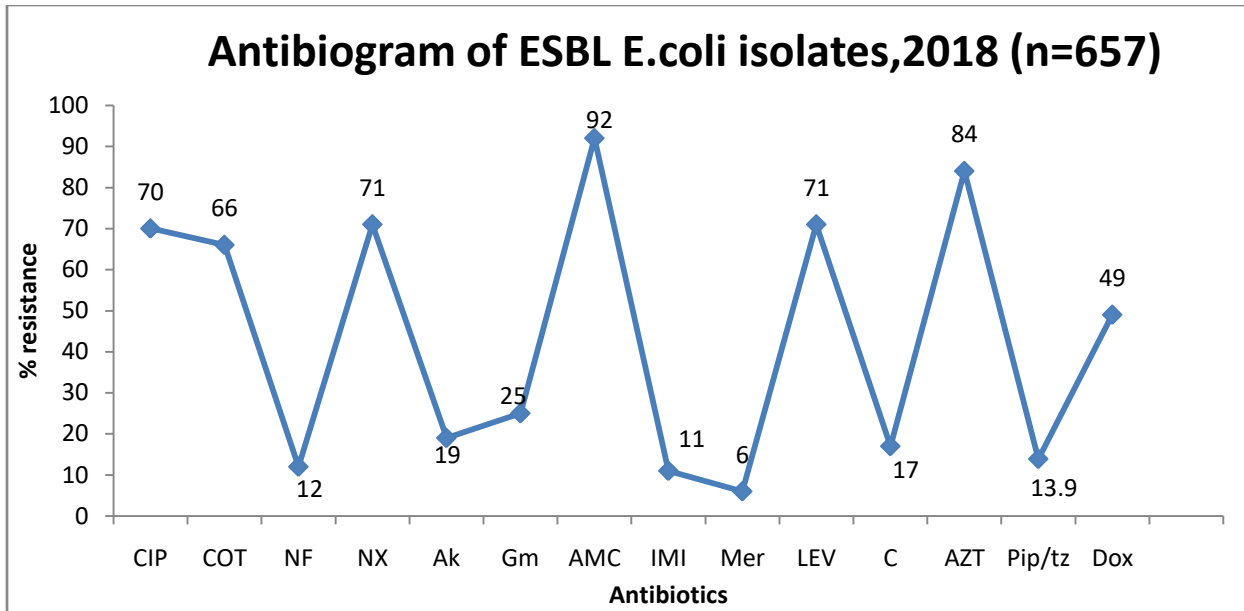
Only 8 *Haemophilus influenzae* isolates were reported in the year 2018. All of the isolates were recovered from sputum. 43% of the reported isolates were resistant towards Cotrimoxazole, 29% to Ciprofloxacin, 17% towards Ampicillin and 13% towards Chloramphenicol. All the isolates were susceptible to Ceftriaxone, meropenem and azithromycin.

#### **1.6 NEISSERIA GONORRHOEAE:**

Only 29 *Neisseria gonorrhoeae* isolate was reported in the year 2018, all were recovered from urethral swab, pus and penile discharge. 96.5% were from males. The reported isolate exhibited 53% resistance to Ciprofloxacin and 50% towards Ceftriaxone.

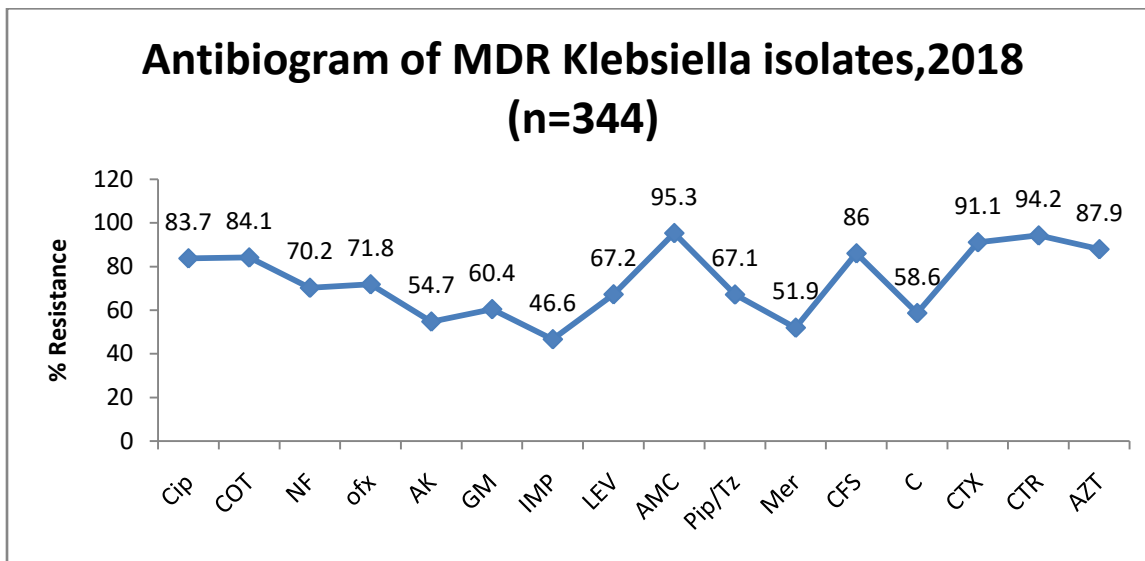
#### **1.7 ESBL *E. coli*:**

ESBL *E. coli* was included in this AMR surveillance program since September 2009 and was the second highest reported pathogen in 2018. A total of 657 ESBL *E. coli* isolates were reported in the year 2018, mostly from urine. The rate of isolation was found higher in females compared to that of male. Infection rate was higher in the age group of 50-79 years in case of males whereas in age group of 20-29 years among females.



#### 1.8 MDR KLEBSIELLA SPP

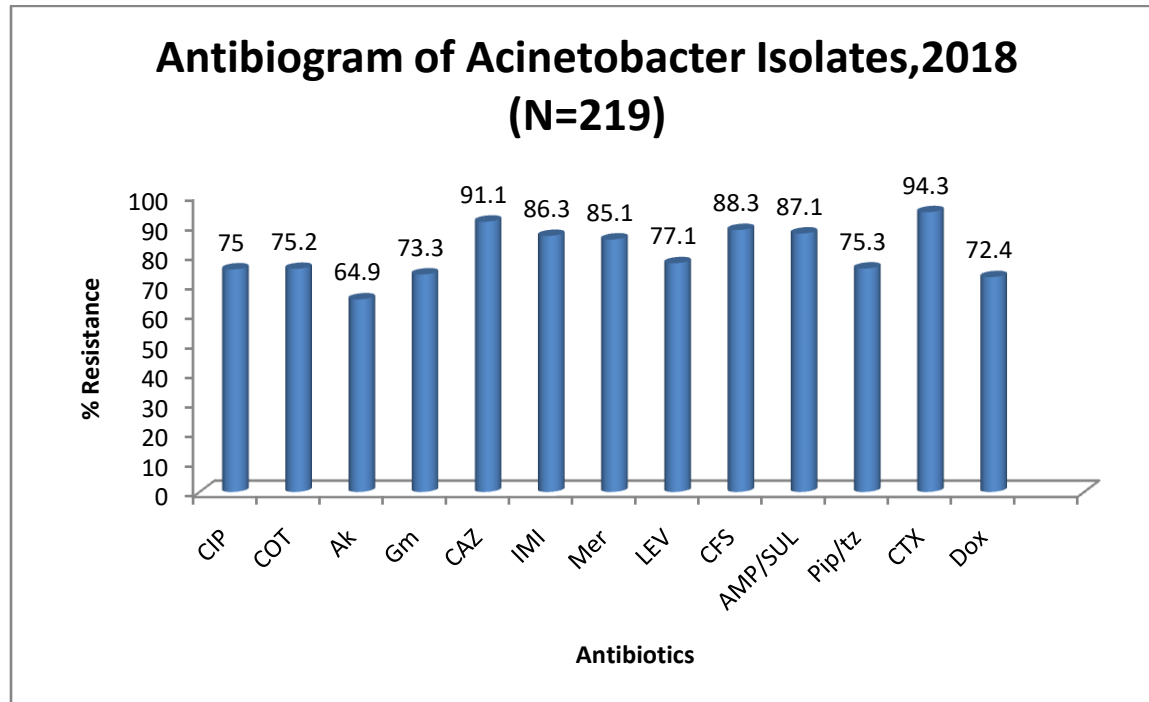
A total of 344 isolates were reported from participating laboratories including NPHL. Of the total isolates reported, 78% were *Klebsiellapneumoniae*, 8% were *K.oxytoca* and 14% were *Klebsiellaspp*. Most of the isolates were recovered from Urine (93%) followed by sputum and pus. Isolation was higher in 20-29 yrs age group among females whereas 50-59 yrs age group in males.



90% of the isolates were resistant to third generation cephalosporins and about half are resistant to carbapenems.

### 1.9 MDR ACINETOBACTER SPP

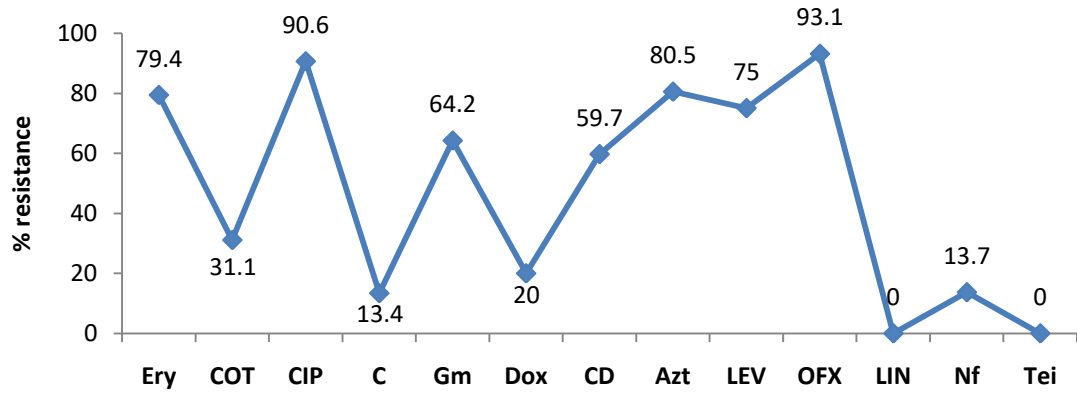
Since 2016, *Acinetobacter*spp has been included as one of the pathogens of AMR interest. A total of 219 isolates of MDR *Acinetobacter*spp were reported of which 34% was recovered from urine followed by sputum (19%) pus (15%) and other specimens. Infection was higher in patients aged 30-39 years & 60-69 years in males whereas 20-29 years in females.



### 1.10 METHICILLIN RESISTANT STAPHYLOCOCCUS AUREUS (MRSA)

A total of 750 isolates were reported in 2018, of which 75% isolates were recovered from pus followed by urine and sputum. Of the total isolates reported, infection was higher in males of 10-19 years age group whereas in females it was reported from 20-29 yrs age group.

### Antibiogram of MRSA isolates,2018 (n=750)



## ANNEX-I

### Legends for hospital code

<b>NPHL</b>	National Public Health Laboratory
<b>KMH</b>	Kathmandu Model Hospital
<b>PTH</b>	Patan Hospital
<b>KCH</b>	KantiChildren'sHospital
<b>TUTH</b>	Tribhuvan UniversityTeachingHospital
<b>BPKIHS</b>	B.P Koirala Institute of Health Sciences
<b>MTH</b>	ManipalTeachingHospital
<b>WRH</b>	Western RegionalHospital
<b>UMH</b>	United Mission Hospital
<b>LZH</b>	Lumbini Zonal Hospital
<b>DH</b>	DhulikhelHospital
<b>SZH</b>	Seti Zonal Hospital
<b>MkZH</b>	Mahakali Zonal Hospital
<b>MZH</b>	Mechi Zonal Hospital
<b>CVL</b>	Central Veterinary laboratory
<b>KZH</b>	Koshi Zonal Hospital
<b>KiMC</b>	KIST Medical College
<b>BZH</b>	Bheri Zonal Hospital
<b>MWRH</b>	Mid- Western Regional Hospital
<b>BYH</b>	Bayalpata Hospital
<b>SKJ</b>	Sukraraj Tropical and Infectious Disease Hospital
<b>PMWH</b>	Paropkar Maternity and Women's Hospital



## Legends for antibiotics

<b>legend</b>	<b>antibiotic</b>
<b>Amp</b>	Ampicillin
<b>Cip</b>	Ciprofloxacin
<b>C</b>	Chloramphenicol
<b>COT</b>	Cotrimoxazole
<b>NA</b>	Nalidixic Acid
<b>CRO</b>	Ceftriaxone
<b>Ofx</b>	Ofloxacin
<b>E</b>	Erythromycin
<b>T</b>	Tetracycline
<b>Azt</b>	Azithromycin
<b>Nf</b>	Nitrofurantoin
<b>PG</b>	Penicillin G
<b>AMC</b>	Amox-Clav
<b>Gm</b>	Gentamicin
<b>Ctx</b>	Cefotaxime
<b>Nx</b>	Norfloxacin
<b>Caz</b>	Ceftazidime
<b>Lev</b>	Levofloxacin
<b>Pip/Taz</b>	Piperacillin/Tazobactam
<b>Cef/sul</b>	Cefoperazone/Sulbactam
<b>Mer</b>	Meropenem
<b>Fox</b>	Cefoxitin
<b>Imi</b>	Imipenem
<b>Ak</b>	Amikacin
<b>Lin</b>	Linezolid
<b>Van</b>	Vancomycin
<b>Dox</b>	Doxycycline
<b>Tob</b>	Tobramycin