

Table 1. Percentages of Susceptible Isolates to Antibiotics Among 4064 Gram-Positive Bacteria - AUBMC 1/7/16 - 30/6/17

Bacteria	Ampicillin	Penicillin	Amox/Clav	Oxacillin	Cephalothin	Erythromycin	Clindamycin	Ciprofloxacin	Tetracycline	Trimeth/Sulfa	Nitrofurantoin	Vancomycin	Teicoplanin
<i>Bacillus</i> spp ¹	30	30	62			87	50	100	100			100	100
<i>Enterococcus</i> spp ²	83					17		58	15		99	97	97
<i>Staphylococcus aureus</i> ³			70 [#]	70	70 [#]	80	84	85	86	96	97	100	100
Coag. Neg. Staph ⁴			33 [#]	33	33 [#]	28	58	50	77	64	100	100	100
<i>Streptococcus agalactiae</i>	100	100	100			69	69					100	100
<i>Streptococcus pneumoniae</i>		48 [#]	Ø	48		69	81	99 ^Δ	71	61		100	100
<i>Streptococcus pyogenes</i>	100	100	100			91	96					100	100
<i>Streptococcus viridans</i> grp ⁵						64	73	86 ^Δ				100	100

¹ Chloramphenicol = 94 % S Imipenem = 100 % S ² Norfloxacin = 58 % S ² Vancomycin resistant enterococci (VRE) = 3.1 % vs 3.4 % last year
⁴ MRSA = 30 % Gentamicin = 95 % S GISA = 0 % ^{3,4} For all Staph, Beta hemolytic strep and *S. pneumoniae*, Clindamycin is also extrapolated based on D-test
⁴ CNS: meth R = 67 % Gentamicin = 76 % S
⁵ Cefepime = 93 % S Ceftriaxone = 89 % S
[#] Extrapolated based on 1ug oxacillin disc, and also the 30ug cefoxitin disc for staph Ø Highly Susceptible by MIC testing Δ Levofloxacin

Table 2. Percentages of Susceptible Isolates to Antibiotics Among 9649 Gram-Negative Bacteria - AUBMC 1/7/16 - 30/6/17

Bacteria	Ampicillin	Amox/Clav	Aztreonam	Cefepime	Cefixime	Cefoxitin	Cefuroxime	Cefotaxime	Ceftazidime	Pipera /azo	Imipenem	Ciprofloxacin	Amikacin	Gentamicin	Trimeth/Sulfa	Nitrofurantoin
<i>Acinetobacter</i> spp				13					14	15	15	15	17	17	28	
<i>Citrobacter</i> spp ¹		100/0	100/85	99	100/60	100/4	100/52	100/64	100/75	100/92	100/98	100/73	100	100/89	100/64	100
<i>Enterobacter</i> spp ¹			72/87	81/98	70/74		60	70/77	73/81	81/86	85/95	91	100/94	81/98	75/81	53/69
<i>Escherichia coli</i> ²	21	60	64	66	55	82	49	53	68	86	95	49	99	78	49	98
<i>H. influenzae</i> ³	72	90					93					99 ^Δ			65	
<i>Klebsiella</i> spp ^{1,2}		62/82	66/82	72/90	64/80	84/96	53/78	56/80	66/84	86	91/98	70/94	97/100	77/93	52/86	63/94
<i>Morganella</i> spp			99	100	86	72		89	96	100	100	77	100	75	45	15
<i>Moraxella catarrhalis</i> ⁴		100					100					100			97	
<i>Proteus</i> spp ¹	44/0	93/75	98	93/100	93/83	99	83/6	86/100	93/100	100	99/100	77/94	99	77/100	42	
<i>P. aeruginosa</i> /spp			85	96					89/96	90/98	79/94	85/98	97	96	0/76	
<i>Salmonella</i> spp ⁵ /typhi	74/96						98/100	99/100				96/70			91/96	
<i>Shigella</i> spp ⁵	57						86	100				100			29	
<i>Serratia</i> spp ¹	5	5	93	96		85		91	96	95	98	99	100	100	95	

¹ *Citrobacter* : diversus /freundii *Enterobacter* : cloacae / aerogenes, *Klebsiella*: pneumoniae / oxytoca. Tetra vs *K. pneu* / oxytoca = 58/24 % S
Proteus : mirabilis / vulgaris *Serratia* : marcescens / liquefaciens Tetra vs *Acinetobacter* = 17 % S
² ESBLs : *E. coli* = 29.5 % *Klebsiella pneumoniae* = 27 % Tetra vs *E. coli* = 46 % S
³ *H. influenzae* : β - Lactamase Pos = 28 % Δ Levofloxacin = 99 % S Ceftriaxone = 99 % S
⁴ *Moraxella* : β - Lactamase Pos = 96 % Levofloxacin = 100 % S
⁵ Ceftriaxone : *Salmonella* spp / typhi = 98/100 % S *Shigella* spp = 86 % S

For Enterobacteriaceae:
Levofloxacin = Ciprofloxacin
Ofloxacin = Norfloxacin
Ceftriaxone = Cefotaxime
Ciprofloxacin = Norfloxacin
Cefuroxime = Cefamandole



Antimicrobial Susceptibility Profiles of Bacterial Isolates

at the
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For Further Information Contact

George F. Araj, PhD, ABMM, FAAM
Professor & Director of Clinical Microbiology
garaj@aub.edu.lb

&
Ghazi S. Zaatar, MD
Professor & Chairman
zaatari@aub.edu.lb

Department of Pathology & Laboratory Medicine

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FURTHER RELEVANT INFORMATION

S. aureus & Coagulase – Negative Staph (CNS):

- MRSA: 30% vs 29% last yr CNS Meth-R: 63% vs 66% last yr
- MRSA vs. Ceftaroline: 97% S 3% I
- *S. lugdunensis*, 2 isolates recovered.
- No GISA recovered.

S. pneumoniae among requested for MICs (ug/ml):

- Penicillin: MIC₉₀ ≤ 0.38 Range: ≤ 0.016 - 1.5
- Ceftriaxone: MIC₉₀ ≤ 0.25 Range: ≤ 0.016 - 0.75
- Levofloxacin: 99% S vs 100% S last yr Tetra: 71% S vs 54% S last yr

Haemophilus spp vs last yr:

- *H. influenzae*: 58% vs 70%
- Serotypes b: 64% vs 73% not b: 36% vs 27% BLNAR isolates: 2 vs 1
- *H. parainfluenzae*: 42% vs 30%
- *Haemophilus* spp Levofloxacin R isolates: 1 vs 6

Enterococcus spp:

- Vanco Resistant (VRE): 3.1% vs 3.4% last yr

β- haemolytic streptococci groups prevalence (%) vs last yr:

- Prevalence: A: 17 vs 19 B: 75 vs 71 C: 3 vs 4 G: 5 vs 6
- All are uniformly susceptible to Penicillin.

Stenotrophomonas maltophilia (% S) vs last yr:

- SXT 98 vs 96 Levo 92 vs 95 Mino 100 vs 99.

Burkholderia cepacia (% S) vs last yr:

- SXT 90 vs 50 Mero 95 vs 100 Mino 100 vs 91 Ceftaz 100 vs 48.

Prevalence (%) of recovered species among:

- *Acinetobacter* : *A. baumannii* 87 *A. Iwoffii* 5 Other spp. 8
- *Citrobacter* : *C. diversus* 8 *C. freundii* 30
- C. koseri* 58 Other spp. 4
- *Klebsiella* : *K. pneumoniae* 94 *K. oxytoca* 6
- *Proteus* : *P. mirabilis* 94 *P. vulgaris* 6
- *Enterobacter* : *E. cloacae* 61 *E. aerogenes* 35 Other spp. 4
- E. agglomerans* 0 *E. sakazaki* 0
- *Serratia* : *S. marcescens* 90 *S. liquefaciens* 4 Other spp. 6
- *Pseudomonas* : *P. aeruginosa* 83 Other spp. 17
- Among the other spp [*Stenotrophomonas maltophilia* 62 vs 72 last yr
- Burkholderia cepacia* 10 vs 5 last yr
- Ps stutzeri* 17
- Other *pseudomonas* spp 11 vs 23]

Salmonella spp & *Shigella* spp Serotypes (%) vs last yr:

- *Salmonella*: *enteritidis* 51 vs 41 *typhimurium* 17 vs 21
- typhi* 11 vs 16 *group B* 2 vs 6
- group C* 8 vs 10 *paratyphi B* 4 vs 3
- paratyphi A* 0 vs 0 *paratyphi C* 0 vs 0
- non-typable* 7 vs 3
- Pefloxacin (Nalidixic Acid) % R: *Salmonella* spp. = 37 vs 54
- *Shigella*: *sonnei* (grp D) 72 vs 88 *flexneri* (grp B) 14 vs 12
- boydii* (grp C) 14 vs 0 *dysenteriae* (grp A) 0 vs 0



GI Etiology % Pos. of total tested vs last yr:

<i>Salmonella</i> spp.	5 vs 8	<i>Shigella</i> spp.	1 vs 4
<i>Campylobacter</i>	0.4 vs 0.7	<i>Rotavirus</i>	10 vs 22

- *Campylobacter* vs last yr: 9 vs 7 isolates recovered from blood.

- *C. difficile* (%) Toxin A & B Pos : 3 vs 4 last yr

GDH Pos - Tox Pos: 4 vs 4	GDH Pos - Tox Neg: 10 vs 11
GDH Neg- Tox Pos: 0 vs 0.01	GDH Neg - Tox Neg: 86 vs 85

Special antimicrobials activity & pathogens vs last yr:

- ESBL prevalence (%) *E. coli* 29.5 vs 28.5

K. pneumoniae 27 vs 30

- Fosfomycin (% S) among tested *E. coli* 97 vs 98

- Colistin (% S) *P. aeruginosa* 96 vs 99

Acinetobacter spp. 56 vs 93 (I: 20%)

- Tigecycline (% S) among ESBL, MDR & CRE:

E. coli 99.8 vs 99.6 *K. pneumoniae* 99 vs 97.5

Acinetobacter spp. 99.7 vs 99.3

- Carbapenem Resistant Enterobacteriaceae (CRE) % R vs last yr:

E. coli 5 vs 3.3 *K. pneumoniae* 8 vs 9.6

Citrobacter spp. 0.6 vs 1 *Enterobacter* spp. 4.8 vs 1.8

Proteus spp. 0.5 vs 0.3 *Serratia* spp. 1.3

Viral - Bacterial % Pos of total tested vs last yr:

- Influenza Overall Pos 2 vs 9

types: A 68 vs 85 B 32 vs 15

- RSV 2 vs 5 - Legionella 0 vs 0

- Cryptococcus 7 vs 1 - Bacterial CSF antigen 0.3 vs 0

Mycobacteria (See also ref. no 2) vs last yr:

(include screening of Syrian immigrants)

- Positive samples among total tested (%) TB 5 vs 4 MOTT 3 vs 4

- Distribution among positive patients (%) TB 38 vs 46 MOTT 62 vs 54

- MDR TB (%) among isolates requested for testing: 23 vs 12

- Among requested for speciation (%) including last yr:

<i>M. simiae</i> 47	<i>M. avium</i> 19
<i>M. abscessus</i> grp 19	<i>M. marinum</i> 5
	<i>M. fortuitum</i> 10

Candida spp (See also ref. no 3) vs last yr:

- *Candida albicans*: 68% vs 70 % *Non albicans*: 32% vs 30%

Among requested for speciation (%) vs. last year:

C. tropicalis 24 vs 32 *C. glabrata* 42 vs 49 *C. guilliermondii* 1 vs 0

C. parapsilosis 10 vs 13 *C. dubliniensis* 5 vs 6 *C. kefyr* 8 vs 0

C. krusei 8 vs 0 *C. lusitanae* 2 vs 0

- Overall *Candida* spp. MIC₉₀ (ug/ml) among requested for susceptibility testing against:

Fluco Vorico Ampho Caspo Mica Flucyt

MIC₉₀ Range : (≤ 1 - 0.016) (≤ 0.12 - 1) (≤ 0.25 - 1) (≤ 0.25 - 0.5) (≤ 0.06 - 0.5) (≤ 1 - 4)

Breakpoint "S" : ≤ 8 ≤ 1 ≤ 1 ≤ 2 ≤ 2 ≤ 4

RELATED ARTICLES

- 1 Araj GF, Avedissian AZ, Ayyash NS, Bey HA, El Asmar RG, Hammoud RZ, Itani LY, Mallak MR, Sabai SA. A Reflection on Bacterial Resistance to Antimicrobial Agents at a Major tertiary Care Center in Lebanon Over a Decade. *Lebanese Medical Journal* 2012; 60 : 125-135.
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- 8 Masoud K, Araj GF, Fadlallah S, Reslan L, Itani L, Avedissian A, Dbaibo G, Saade A, Matar GM. Genotyping of Mycobacterium tuberculosis in Lebanon Using a Rapid Spoligotyping Multiplex Luminex Method. *ASM Microbe 2017 Meeting*, New Orleans, June1-5, 2017. Abstract No. 2017-A-54-MICROBE.

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