

คณะที่ปรึกษา

คณะทำงาน

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ชูปัญญา
ตรีสกุล
ฐานวิเศษ
เข็มลา
ใจช่วง
ชาระ
Bloss
ธรรมธิวัฒน์
Skaggs
สวาสดีวงศ์
ที่ปรึกษา

นางสาวพรพรรณ
นางสาวอุไรวรรณ
ดร.บารเมษฐ์
นายอภิสิทธิ์

บึงกาญจนา
สุรินทร์
ภิราล้า
คำกรฤชา

คณะกรรมการวิชาการ

นางสาวอรอุมา
นางสาวอุไรวรรณ

แสงวีเชียร
สุรินทร์

ฝ่ายสนับสนุนข้อมูล

นางชิดชนก
นางสมพร
นางสาวเพาวดี
นางสาวนันทธัญญ์
นางสาววารุณี
นางสาวรัชนิภา

พรมคง
อ่อนหวาน
แอบโฮสง
เดชเวชเจริญ
พ่ออามาตย์
คำวงศ์ปิ่น

สนับสนุนโดย

ศูนย์ความร่วมมือไทย-สหรัฐด้านสาธารณสุข

ANTIMICROBIAL SUSCEPTIBILITY

NAKHON PHANOM

2019

จัดพิมพ์โดย
สำนักงานสาธารณสุขจังหวัดนครพนม

Percentage of susceptible Organisms Isolated From Sputum specimen, Jan - Dec 2019

Organism		Total Isolates	Percent Susceptible (%)																						
			Beta-Lactams										Carbapenems			Poly myxin	Quinolones	Aminoglycosides			Glyco peptides	Miscellaneous			
			Penicillin	Ampicillin	Amoxicillin/ Clavulanic acid	Piperacil/ Tazobactam	Cefazolin	Cefuroxime	Cefotaxime	Ceftriaxone	Ceftazidime	Oxacillin	Cefoxitin	Ertapenem	Imipenem			Meropenem	Amikacin	Gentamicin		Gentamicin 120 µg	Clindamycin	Erythromycin	Trimetho/ Sulfamethoxazole
Gram negative	Acinetobacter calcoaceticus-baumannii complex	218		R	R	51 (200)				4 (191)	46 (203)			R	37 (79)	55 (195)	98 (60)	68 (204)	80 (202)	54 (202)					45 (195)
	Burkholderia pseudomallei	69			88 (16)						97 (69)				100 (8)										90 (68)
	Enterobacter spp.	86		R	R	R	R	56 (85)		73 (86)	74 (86)		R	99 (79)		100 (82)		86 (86)	100 (86)	91 (81)					87 (84)
	Escherichia coli	100		10 (91)	63 (94)	92 (90)		49 (92)		49 (93)	57 (94)		88 (92)	97 (88)		97 (87)	100 (3)	54 (94)	100 (94)	73 (93)					61 (94)
	Haemophilus influenzae	78		61 (76)	94 (77)					99 (74)						97 (75)		100 (76)							43 (76)
	Klebsiella pneumoniae	401		R	69 (400)	87 (378)		66 (389)		67 (399)	68 (400)		89 (393)	94 (378)		95 (370)	92 (13)	68 (400)	99 (398)	90 (393)					69 (397)
	Pseudomonas aeruginosa	238		R	R	89 (233)			R	R	89 (235)				89 (56)	88 (219)	80 (5)	90 (238)	94 (235)	89 (232)					R
	Stenotrophomonas maltophilia	52		R	R	R			R	R				R	R	R			R	R	R				98 (52)
Gram positive	Enterococcus faecalis	43	76 (42)	98 (42)			R	R	R	R	R								R	R	74 (43)	100 (43)	R		R
	Staphylococcus aureus	217									96 ^d (211)									98 (211)			94 (211)	94 (215)	100 (214)
	MRSA ^a	8									0 ^d (8)								63 (8)		100 ^c (8)	25 (8)	13 (8)	100 (8)	
	MSSA	209									100 ^d (203)								100 (203)				97 (203)	97 (207)	100 (206)
	Streptococcus pneumoniae	107	97 ^b (107)							95 ^c (81)											100 (98)	64 (101)	53 (106)	58 (104)	

a = Calculated fewer than the standard recommendation of 30 isolates , b = Interpret according to oxacillin susceptibility test and MIC Penicillin, c = MIC Interpretive Criteria , d = Interpret according to cefoxitin susceptibility test, R= Intrinsic resistant, WT= Wild type

Percentage of susceptible Organisms Isolated From Urine specimen, Jan - Dec 2019

Organism		Total isolates	Percent Susceptible (%)																							
			Beta-Lactams										Number Tested (n)			Poly myxin	Quinolones		Aminoglycosides			Glyco peptides	Miscellaneous			
			Penicillin	Ampicillin	Amoxicillin/ Clavulanic acid	Piperacil/ Tazobactam	Cefazolin	Cefuroxime	Cefotaxime	Ceftriaxone	Ceftazidime	Oxacillin	Cefoxitin	Ertapenem	Imipenem	Meropenem	Colistin by MIC	Ciprofloxacin	Ofloxacin	Amikacin	Gentamicin	Gentamicin 120 µg	Vancomycin	Clindamycin	Erythromycin	Trimetho/ Sulfamethoxazole
Gram negative	Escherichia coli	449		12 (440)	61 (444)	91 (205)	51 (439)	51 (441)		53 (444)	63 (446)		86 (434)	97 (430)	90 (30)	97 (417)	100 ^{WT} (5)	36 (444)	44 (406)	100 (446)	65 (434)					40 (443)
	Klebsiella pneumoniae	133		R	50 (129)	70 (63)	46 (123)	46 (124)		44 (131)	47 (131)		72 (123)	82 (127)		82 (124)	92 ^{WT} (13)	37 (131)	62 (112)	92 (131)	72 (130)					42 (130)
	Proteus mirabilis	43		50 (42)	79 (43)						93 (43)		93 (41)	98 (43)			R	58 (43)		100 (43)	67 (43)					47 (43)
	Pseudomonas aeruginosa	43		R	R	80 (41)			R	R	76 (41)						79 (38)	50 (4)	79 (42)		86 (42)	78 (41)				
Gram positive	Enterococcus faecalis	326	58 (325)	92 (324)			R	R	R	R	R								37 (299)	R	R	48 (322)	98 (325)	R		R
	Enterococcus faecium	125	4 (124)	7 (123)			R	R	R	R	R								7 (116)	R	R	74 (125)	93 (125)	R		R
	Staphylococcus aureus	42										95 ^d (39)									100 (40)				100 (8)	98 (41)

d = Interpret according to cefoxitin susceptibility test, R= Intrinsic resistant, WT= Wild type

Percentage of susceptible Organisms Isolated From Nosocomial infection, Jan - Dec 2019

Organism		Total Isolates	Percent Susceptible (%)																							
			Number Tested (n)																							
			Beta-Lactams										Carbapenems			Poly myxin	Quinolones		Aminoglycosides			Glyco peptides	Miscellaneous			
Penicillin	Ampicillin	Amoxicillin/ Clavulanic acid	Piperacil/ Tazobactam	Cefazolin	Cefuroxime	Cefotaxime	Ceftriaxone	Ceftazidime	Oxacillin	Cefoxitin	Ertapenem	Imipenem	Meropenem	Colistin by MIC	Ciprofloxacin		Ofloxacin	Amikacin	Gentamicin	Gentamicin 120 µg	Vancomycin		Clindamycin	Erythromycin	Trimetho/ Sulfamethoxazole	
Gram negative	Acinetobacter calcoaceticus-baumannii complex ^a	19		R	R	87 (15)				0 (14)	80 (15)			R	100 (5)	100 (15)	100 (3)	93 (15)		100 (15)	80 (15)					86 (14)
	Enterobacter spp. ^a	13		R	R	100 (12)	R	69 (13)		85 (13)	92 (13)		R	100 (11)	50 (2)	100 (11)		92 (13)		100 (13)	92 (12)					92 (13)
	Escherichia coli	41		8 (40)	66 (41)	93 (30)	35 (40)	51 (41)		55 (40)	59 (41)		85 (39)	95 (40)	100 (3)	97 (36)		44 (41)	43 (14)	98 (40)	76 (38)					36 (39)
	Klebsiella pneumoniae	40		R	56 (39)	81 (37)	48 (33)	59 (34)		61 (38)	62 (39)		81 (37)	95 (38)	88 (8)	95 (37)	100 ^{WT} (6)	62 (39)	20 (5)	100 (38)	92 (38)					61 (38)
	Klebsiella spp. ^a	3		0 (3)	67 (3)	50 (2)	67 (3)	67 (3)		67 (3)	67 (3)		100 (3)	67 (3)	100 (1)	100 (1)		67 (3)		100 (3)	100 (3)					67 (3)
	Proteus mirabilis ^a	6		67 (6)	67 (6)	100 (5)	67 (6)	67 (6)		83 (6)	100 (6)		100 (6)	100 (5)		100 (6)		83 (6)		100 (6)	80 (5)					83 (6)
	Pseudomonas aeruginosa	33		R	R	91 (33)			R	R	91 (33)			R	100 (7)	97 (32)		97 (33)		100 (33)	94 (33)					R
	Stenotrophomonas maltophilia ^a	5		R	R	R			R	R				R	R	R				R	R	R				
Gram positive	Enterococcus faecalis	30	45 (29)	83 (30)			R	R	R	R	R									R	R	45 (29)	100 (30)	R		R
	Enterococcus faecium ^a	16	0 (16)	0 (16)			R	R	R	R	R									R	R	100 (16)	100 (16)	R		R
	Enterococcus spp. ^a	5	20 (5)	40 (5)																		80 (5)	100 (5)			
	Staphylococcus aureus ^a	10										100 ^d (10)										100 (10)		89 (10)	89 (10)	100 (10)
	Streptococcus pneumoniae ^a	2	100 ^b (2)							50 ^c (2)												100 (2)	100 (2)	50 (2)		0 (1)

a = Calculated fewer than the standard recommendation of 30 isolates , b = Interpret according to oxacillin susceptibility test and MIC Penicillin, c = MIC Interpretive Criteria , d = Interpret according to cefoxitin susceptibility test, R= Intrinsic resistant, WT= Wild type

Percentage of susceptible Organisms Isolated From All specimen, Jan - Dec 2019

Organism		Total isolates	Percent Susceptible (%)																							
			Beta-Lactams										Carbapenems			Poly myxin	Quinolones		Aminoglycosides			Glyco peptides	Miscellaneous			
			Penicillin	Ampicillin	Amoxicillin/ Clavulanic acid	Piperacil/ Tazobactam	Cefazolin	Cefuroxime	Cefotaxime	Ceftriaxone	Ceftazidime	Oxacillin	Cefoxitin	Ertapenem	Imipenem		Meropenem	Ciprofloxacin	Ofloxacin	Amikacin	Gentamicin		Gentamicin 120 µg	Vancomycin	Clindamycin	Erythromycin
Gram negative	<i>Acinetobacter calcoaceticus-baumannii</i> complex	355		R	R	56 (324)				12 (303)	52 (334)			R	48 (154)	60 (320)	98 (118)	69 (333)		81 (331)	59 (332)					51 (324)
	(ICU)	47		R	R	36 (47)				0 (45)	32 (47)			R	32 (25)	45 (47)	100 (22)	53 (47)		61 (46)	38 (47)					33 (45)
	(Inpatient)	272		R	R	58 (262)				12 (246)	52 (272)			R	46 (116)	61 (259)	98 (90)	70 (271)		82 (271)	59 (270)					51 (263)
	(Outpatient) ^a	23		R	R	74 (23)				29 (21)	83 (23)			R	78 (18)	82 (22)	100 (10)	83 (23)		91 (22)	77 (22)					70 (23)
	<i>Aeromonas</i> spp.	30				88 (26)				81 (27)	89 (28)		46 (26)	81 (27)		100 (27)		93 (30)			89 (27)					86 (29)
	<i>Burkholderia pseudomallei</i>	338			93 ^a (153)						96 ^a (337)				96 ^a (108)											91 ^a (334)
	<i>Enterobacter</i> spp.	215		R	R	89 (199)	R	58 (184)		72 (214)	74 (214)		R	96 (199)	83 (42)	98 (202)	70 ^{WT} (20)	79 (212)		100 (213)	88 (207)					80 (211)
	<i>Escherichia coli</i> (all isolates)	1197		16 (1169)	68 (1177)	94 (908)	43 (847)	57 (858)	69 (320)	62 (1181)	72 (1188)		90 (1164)	97 (1164)	96 (445)	98 (1094)	98 ^{WT} (327)	49 (1186)	45 (362)	100 (1173)	70 (1161)					45 (1181)
	(Urine-Inpatient)	405		12 (397)	62 (401)	91 (181)	51 (396)	50 (398)		52 (401)	62 (403)		86 (393)	96 (387)		97 (373)	100 ^{WT} (5)	36 (402)	44 (369)	100 (403)	64 (394)					40 (400)
	(Urine-Outpatient)	51		16 (50)	60 (50)		58 (50)	58 (50)		62 (50)	70 (50)		88 (48)	96 (50)		96 (50)	100 ^{WT} (1)	24 (49)	39 (44)	100 (50)	68 (47)					48 (50)
	<i>Haemophilus influenzae</i> (all isolates)	88		56 (86)	92 (87)						99 (84)					98 (85)		99 (86)								41 (85)
	(age 0-5 years old) ^a	13		38 (13)	92 (13)						100 (13)					100 (13)			92 (13)							46 (13)
	(age >5 years old)	73		61 (71)	93 (72)						99 (69)					99 (70)		100 (71)								41 (70)
	<i>Klebsiella pneumoniae</i> (all isolates)	777		R		69 (768)	86 (674)	59 (646)	65 (652)	68 (769)	70 (773)		85 (749)	93 (744)	84 (183)	94 (721)	96 ^{WT} (127)	65 (772)	81 (103)	98 (769)	88 (761)					68 (767)
	(ICU)	75		R		59 (74)	78 (69)	59 (68)	54 (68)	54 (74)	54 (74)		78 (74)	85 (72)		87 (68)	88 ^{WT} (8)	57 (74)	50 (8)	97 (73)	81 (72)					58 (73)
	(Inpatient)	635		R		71 (628)	86 (544)	59 (528)	66 (535)	68 (628)	70 (632)		86 (610)	93 (607)	84 (145)	94 (591)	96 ^{WT} (102)	65 (631)	84 (88)	98 (629)	88 (622)					69 (627)
	(Outpatient)	83		R		80 (82)	95 (75)	70 (61)	78 (60)	83 (83)	86 (83)		88 (82)	99 (81)	97 (30)	99 (77)	100 ^{WT} (22)	70 (83)	100 (83)	90 (82)					75 (83)	
	<i>Klebsiella</i> spp.	58		4 (56)	63 (56)	87 (47)	39 (49)	67 (49)		74 (57)	74 (57)		74 (54)	95 (55)		96 (52)		72 (57)	100 (57)	95 (57)						74 (57)
	<i>Morganella morganii</i>	47		R	R	97 (39)				87 (47)	91 (47)		71 (45)	100 (44)		100 (44)	R	74 (47)	100 (46)	89 (45)						77 (47)
	<i>Proteus mirabilis</i>	118		58 (115)	82 (116)	96 (81)	69 (112)	83 (111)		91 (116)	97 (116)		93 (113)	98 (116)		97 (109)	R	80 (116)	100 (117)	81 (114)						67 (117)
	<i>Pseudomonas aeruginosa</i>	401		R	R	88 (390)			R	R	88 (396)			R	77 (113)	87 (368)	73 (26)	89 (400)	93 (397)	88 (394)						R
	<i>Salmonella</i> spp.	37		47 (36)		100 (21)				96 (23)	95 (22)							47 (30)								86 (37)
	<i>Shigella</i> spp. ^a	4		75 (4)														50 (2)								50 (4)
	<i>Stenotrophomonas maltophilia</i>	73		R	R	R			R	R				R	R	R			R	R	R					96 (73)
Gram positive	<i>Enterococcus faecalis</i>	450	63 (437)	92 (447)			R	R	R	R	R							36 (295)	R	R	55 (441)	98 (448)	R			R
	<i>Enterococcus faecium</i>	156	9 (152)	12 (153)			R	R	R	R	R							7 (116)	R	R	93 (154)	93 (156)	R			R
	<i>Enterococcus</i> spp.	66		68 (65)																67 (63)	98 (65)					
	<i>Staphylococcus aureus</i> (all isolates)	647								95 ^a (626)								86 (22)		98 (630)	100 ^a (123)	90 (605)	89 (618)	99 (640)		
	(MRSA)	30								0 ^a (30)									90 (30)	76 (30)	100 ^a (30)	18 (30)	7 (30)	93 (30)		
	(MSSA)	617								100 ^a (596)									100 (16)	99 (601)	100 ^a (99)	94 (577)	93 (590)	99 (610)		
	(ICU)	66								95 ^a (63)									100 (1)	97 (65)		92 (63)	89 (66)	100 (66)		
	(Inpatient)	501								95 ^a (486)									86 (21)	98 (488)	100 ^a (99)	90 (463)	90 (474)	100 (494)		
	(Outpatient)	103								95 ^a (100)									100 (1)	97 (99)		88 (98)	87 (100)	96 (103)		
	<i>Staphylococcus Coagulase-Negative (All)</i>	654								48 ^a (510)									78 (41)	77 (631)	100 ^a (396)	54 (606)	48 (615)	70 (647)		
	<i>Staphylococcus Coagulase-negative (Blood)</i>	562								51 ^a (423)									78 (41)	78 (540)	100 ^a (385)	55 (552)	50 (559)	71 (555)		
	<i>Streptococcus agalactiae</i> (Strep. group B)	111	100 (106)							100 (89)											100 (32)	82 (88)	82 (94)			
	<i>Streptococcus pyogenes</i> (Strep. group A)	68	98 (66)							100 (61)												100 (62)	98 (64)			
	<i>Beta-hemolytic group Streptococci</i>	63	97 (62)							98 (60)													86 (51)	83 (52)		
	<i>Streptococcus pneumoniae</i> (all isolates)	151	96 ^a (150)							96 ^a (114)											100 (126)	70 (133)	60 (139)	56 (132)		
	(age 0-5 years old) ^a	10	90 ^a (10)							100 ^a (5)											100 (8)	89 (9)	89 (9)	57 (7)		
	(age >5 years old)	137	96 ^a (136)							97 ^a (105)											100 (114)	69 (121)	59 (126)	58 (122)		

a = Calculated fewer than the standard recommendation of 30 isolates , b = Interpret according to oxacillin susceptibility test and MIC Penicillin, c = MIC Interpretive Criteria , d = Interpret according to cefoxitin susceptibility test, R= Intrinsic resistant, WT= Wild type

Percentage of susceptible Organisms Isolated From Blood specimen, Jan - Dec 2019

Organism		Total isolates	Percent Susceptible (%) Number Tested (n)																							
			Beta-Lactams											Carbapenems			Poly myxin	Quinolones	Aminoglycosides			Glyco peptides	Miscellaneous			
			Penicillin	Ampicillin	Amoxicillin/ Clavulanic acid	Piperacil/ Tazobactam	Cefazolin	Cefuroxime	Cefotaxime	Ceftriaxone	Ceftazidime	Oxacillin	Cefoxitin	Ertapenem	Imipenem	Meropenem	Colistin by MIC	Ciprofloxacin	Amikacin	Gentamicin	Gentamicin 120 µg	Vancomycin	Clindamycin	Erythromycin	Trimetho/ Sulfamethoxazole	
Gram negative	<i>Acinetobacter calcoaceticus-baumannii</i> complex	50		R	R	80 (49)					80 (49)			R		82 (49)	97 (33)	92 (49)		80 (49)					69 (49)	
	<i>Aeromonas</i> spp. ^a	18				94 (16)			94 (17)	100 (18)		50 (16)	78 (18)		100 (17)				82 (17)						94 (17)	
	<i>Burkholderia pseudomallei</i>	259			93 ^a (132)					96 ^a (258)				96 ^a (101)											92 ^a (257)	
	<i>Enterobacter</i> spp.	37		R	R	97 (36)	R	62 (13)		70 (37)	76 (37)		R	97 (36)	82 (28)	100 (35)	67 ^{WT} (18)	80 (35)	100 (36)	83 (36)					86 (37)	
	<i>Escherichia coli</i>	541		20 (535)	73 (532)	94 (492)		74 (222)		73 (537)	83 (541)		93 (531)	98 (541)	97 (389)	99 (493)	99 ^{WT} (317)	56 (540)	100 (527)	73 (537)					45 (539)	
	<i>Klebsiella pneumoniae</i>	172		R	85 (169)	90 (163)		86 (70)		87 (171)	87 (172)		87 (166)	97 (171)	94 (117)	97 (159)	97 ^{WT} (98)	78 (171)	99 (170)	96 (170)					86 (171)	
	<i>Nonfermentative Gram-Negative Bacteria</i>	77				60 ^a (15)					76 ^a (76)				73 ^a (15)	73 ^a (15)		76 ^a (29)	89 ^a (28)	64 ^a (28)					70 ^a (76)	
	<i>Proteus mirabilis</i> ^a	18		65 (17)	81 (16)	88 (16)		92 (13)		94 (17)	100 (17)		81 (16)	94 (17)		88 (16)	R	94 (17)	100 (17)	88 (16)					94 (17)	
	<i>Pseudomonas aeruginosa</i> ^a	29		R	R	71 (28)			R	R	79 (29)			R	43 (23)	73 (26)	75 (16)	72 (29)	81 (27)	79 (29)						R
<i>Salmonella</i> spp. ^a	22		45 (22)						95 (22)	95 (21)							77 ^{WT} (13)	47 (19)							82 (22)	
Gram positive	<i>Enterococcus faecalis</i> ^a	28		93 (28)			R	R	R	R	R									R	R	54 (24)	100 (28)	R		R
	<i>Enterococcus faecium</i> ^a	6		67 (6)			R	R	R	R	R									R	R	100 (5)	100 (6)	R		R
	<i>Staphylococcus aureus</i>	142									96 ^d (134)							86 (22)	98 (140)	100 ^a (103)	90 (141)	89 (142)			98 (142)	
	(MRSA) ^a	6									0 ^d (6)							50 (6)	67 (6)	100 ^a (6)	33 (6)	17 (6)			83 (6)	
	(MSSA)	136									100 ^d (128)							100 (16)	99 (134)	100 ^a (97)	93 (135)	93 (136)			99 (136)	
	<i>Staphylococcus Coagulase negative</i>	562	22 (41)	100 (31)							51 ^a (423)							78 (41)	78 (540)	100 ^a (385)	55 (552)	50 (559)	71 (555)			
	(MRCNS)	208	23 (35)	100 (25)							0 ^d (208)							74 (35)	61 (202)	99 ^a (150)	34 (202)	27 (208)	56 (207)			
	(MSCNS)	354	17 (6)	100 (6)							100 ^d (215)							100 (6)	88 (338)	100 ^a (235)	67 (350)	63 (351)	80 (348)			
	<i>Streptococcus agalactiae</i>	49	100 (47)																	100 (19)	83 (48)	85 (48)				
	<i>Streptococcus pneumoniae</i>	45	95 ^a (44)					100 ^{a,c} (8)	100 ^a (36)											100 (29)	88 (34)	85 (34)	62 (29)			
	<i>Streptococcus pyogenes</i> ^a	28	100 (28)					100 (4)	100 (23)											100 (5)	100 (25)	100 (26)				