

Comparison of CLSI and EUCAST  
Reference Media for  
*S. pneumoniae* Disk Diffusion

# Phase II Study Design

- To test 100 clinical *S. pneumoniae* isolates obtained from CDC bank
  - MHA+5% sheep blood and MH-F agar from BD
  - CDC *Streptococcus* panel from Trek
  - Include *Streptococcus pneumoniae* ATCC 49619 for QC
- **3 testing sites:**
  - CDC Streptococcus lab: Dr. Lesley McGee
  - Children's Hospital Los Angeles (CHLA): Dr. Jennifer Dien Bard
  - University of Rochester Medical Center: Dr. Dwight Hardy

# All Data Combined: 2 SITES (QC FAILED DATA OMITTED)

Antibiotic	20 hours				24 hours			
	%Categorical Agreement	%VME	%ME	% MiE	%Categorical Agreement	%VME	%ME	%MiE
Oxacillin	98.78	0	1.22	0	98.78	0	1.22	0
ceftaroline	100	0	0	0	100	0	0	0
vancomycin	99.66	0	0.34	0	99.66	0	0.34	0
erythromycin	98.94	0	0	1.06	97.98	0	0	2.02
doxycycline	97.31	1.61	0	1.52	97.31	1.61	0	1.52
levofloxacin	98.94	0	0	1.06	98.94	0	0	1.06
trimethoprim-sulfamethoxazole	95.45	0	0	4.55	95.96	0	0	4.04
clindamycin	95.62	1.35	0	3.03	98.5	0	0	1.51
rifampin	100	0	0	0	100	0	0	0
chloramphenicol	99.43	0	0.57	0	100	0	0	0
quinupristin/dalfopristin	93.94	0	0	6.06	92.93	0	0	7.07
linezolid	100	0	0	0	100	0	0	0

# Data by Site: 20 hours (QC FAILED DATA OMITTED)

Antibiotic	Site 1				Site 3			
	%Categorical Agreement	%VME	%ME	%MiE	%Categorical Agreement	%VME	%ME	%MiE
Oxacillin	100	0	0	0	97.56	0	2.44	0
ceftaroline	100	0	0	0	100	0	0	0
vancomycin	100	0	0	0	100	0	0	0
erythromycin	98.88	0	0	1.12	98.99	0	0	1.01
doxycycline	96.6	2.38	0	1.02	97.96	0	0	2.04
levofloxacin	98.95	0	0	1.05	98.95	0	0	1.05
trimethoprim-sulfamethoxazole	95.96	0	0	4.04	94.95	0	0	5.05
clindamycin	98.99	0	0	1.01	92.25	2.70	0	5.05
rifampin	100	0	0	0	100	0	0	0
chloramphenicol	98.88	0	1.12	0	100	0	0	0
quinupristin/dalfopristin	95.96	0	0	4.04	91.92	0	0	8.08
linezolid	100	0	0	0	100	0	0	0

# Data by Site: 24 hours (QC FAILED DATA OMITTED)

Antibiotic	Site 1				Site 3			
	%Categorical Agreement	%VME	%ME	%MiE	%Categorical Agreement	%VME	%ME	%MiE
Oxacillin	100	0	0	0	97.56	0	2.44	0
ceftaroline	100	0	0	0	100	0	0	0
vancomycin	100	0	0	0	100	0	0	0
erythromycin	97.98	0	0	0	97.90	0	0	2.10
doxycycline	96.6	2.38	0	1.02	97.96	0	0	2.04
levofloxacin	100	0	0	0	97.96	0	0	2.04
trimethoprim-sulfamethoxazole	96.97	0	0	3.03	94.95	0	0	5.05
clindamycin	98.99	0	0	1.01	95.26	2.70	0	2.04
rifampin	100	0	0	0	100	0	0	0
chloramphenicol	100	0	0	0	100	0	0	0
quinupristin/dalfopristin	95.96	0	0	4.04	89.90	0	0	10.10
linezolid	100	0	0	0	100	0	0	0

# QC Ranges for *S. pneumoniae* ATCC 49619

<b>Drug</b>	<b>CLSI QC range (mm)</b>	<b>Disc content (ug)</b>	<b>EUCAST QC range (mm)</b>	<b>Disc content (ug)</b>
Quinupristin/Dalfopristin	19-24	15	-	-
Erythromycin	25-30	15	26-32	15
Trimethoprim-sulfamethoxazole	20-28	1.25/23.75	18-26	1.25/23.75
Linezolid	25-34	30	23-39	10
Rifampin	25-30	5	26-32	5
Oxacillin	</=12	1	8-14	1
Levofloxacin	20-25	5	21-27	5
Clindamycin	19-25	2	22-28	2
Doxycycline	25-34	30	-	-
Chloramphenicol	23-27	30	24-30	30
Vancomycin	20-27	30	17-23	5
Ceftaroline	31-41	30	-	-

# CLSI QC Data: No. of QC runs that passed (2 SITES)

Drug (DD Reference Range)	20 hours		24 hours		Isolates that failed QC	
	CLSI MHA+5% QC passed (%)	EUCAST MH-F QC passed (%)	CLSI MHA+5% QC passed (%)	EUCAST MH-F QC passed (%)	CLSI MHA+5% Range of zone diameter	EUCAST MH-F Range of zone diameter
Quinupristin/Dalfopristin (19-24mm)	20/20 (100%)	20/20 (100%)	20/20 (100%)	20/20 (100%)	NA	NA
Erythromycin (25-30 mm)	19/20 (95.0%)	20/20 (100%)	20/20 (100%)	20/20 (100%)	31	NA
Trimethoprim- sulfamethoxazole (20-28 mm)	20/20 (100%)	20/20 (100%)	20/20 (100%)	20/20 (100%)	NA	NA
Linezolid (25-34mm)	20/20 (100%)	20/20 (100%)	20/20 (100%)	20/20 (100%)	NA	NA
Rifampin (25-30 mm)	20/20 (100%)	18/19 (94.7%)	20/20 (100%)	19/19 (100%)	NA	NA
Oxacillin (</=12 mm)	20/20 (100%)	20/20 (100%)	20/20 (100%)	20/20 (100%)	NA	NA
Levofloxacin (20-25 mm)	19/20 (95.0%)	20/20 (100%)	19/20 (95.0%)	20/20 (100%)	26-27	NA
Clindamycin (19-25 mm)	20/20 (100%)	20/20 (100%)	20/20 (100%)	20/20 (100%)	NA	NA
Doxycycline (25-34 mm)	20/20 (100%)	20/20 (100%)	20/20 (100%)	20/20 (100%)	NA	NA
Chloramphenicol (23-27 mm)	19/20 (95%)	18/19 (94.7%)	19/20 (95%)	19/19 (100%)	28	28
Vancomycin (20-27 mm)	20/20 (100%)	20/20 (100%)	20/20 (100%)	20/20 (100%)	NA	NA
Ceftaroline (31-41 mm)	20/20 (100%)	19/20 (95.0%)	20/20 (100%)	19/20 (95.0%)	NA	42

# CLSI QC Data by Site: No. of QC runs that passed, 20 hour read

Drug	CLSI MHA+5%		EUCAST MH-F	
	Site 1	Site 3	Site 1	Site 3
Quinupristin/Dalfopristin	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Erythromycin	9/10 (90%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Trimethoprim-sulfamethoxazole	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Linezolid	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Rifampin	10/10 (100%)	10/10 (100%)	8/9 (88.9%)	10/10 (100%)
Oxacillin	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Levofloxacin	9/10 (90%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Clindamycin	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Doxycycline	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Chloramphenicol	10/10 (100%)	9/10 (90%)	8/9 (88.9%)	10/10 (100%)
Vancomycin	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Ceftaroline	10/10 (100%)	10/10 (100%)	10/10 (100%)	9/10 (90%)



# CLSI QC Data by Site: No. of QC runs that passed, 24 hour read

Drug	CLSI MHA+5%		EUCAST MH-F	
	Site 1	Site 3	Site 1	Site 3
Quinupristin/Dalfopristin	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Erythromycin	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Trimethoprim-sulfamethoxazole	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Linezolid	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Rifampin	10/10 (100%)	10/10 (100%)	9/9 (100%)	10/10 (100%)
Oxacillin	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Levofloxacin	9/10 (90%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Clindamycin	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Doxycycline	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Chloramphenicol	10/10 (100%)	9/10 (90%)	9/9 (100%)	10/10 (100%)
Vancomycin	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
Ceftaroline	10/10 (100%)	10/10 (100%)	10/10 (100%)	9/10 (90%)