APPENDIX A

McFarland

McFarland or $BaSO_4$ standard consists of 0.048 M $BaCl_2$ and 0.36 M H_2SO_4. $BaCl_2$ 0.048 M is prepare by adding 1.175g of $BaCl_2.2H_2O$ in 100 ml of water. H_2SO_4 0.36 M is 1% V/V preparing by adding 1ml of concentrated H_2SO_4 in 100ml of water.

There are many numbers of McFarland standard for approximating organism cell density. The table shows mixed ratio of 0.048 M $BaCl_2$ and 0.36 M H_2SO_4 to make McFarland standard.

	McFarland No.					
	0.5	1	2	3	4	5
$BaCl_2$ (ml)	0.05	0.1	0.2	0.3	0.4	0.5
H_2SO_4 (ml)	9.95	9.9	9.8	9.7	9.6	9.5
Approximate cell density ($x10^8$/ml)	1.5	3	6	9	12	15

APPENDIX B

Streptococcus pneumoniae Collection Form (reserch # ____)

โรงพยาบาล _____ No. _____

ชื่อ _____ HN _____

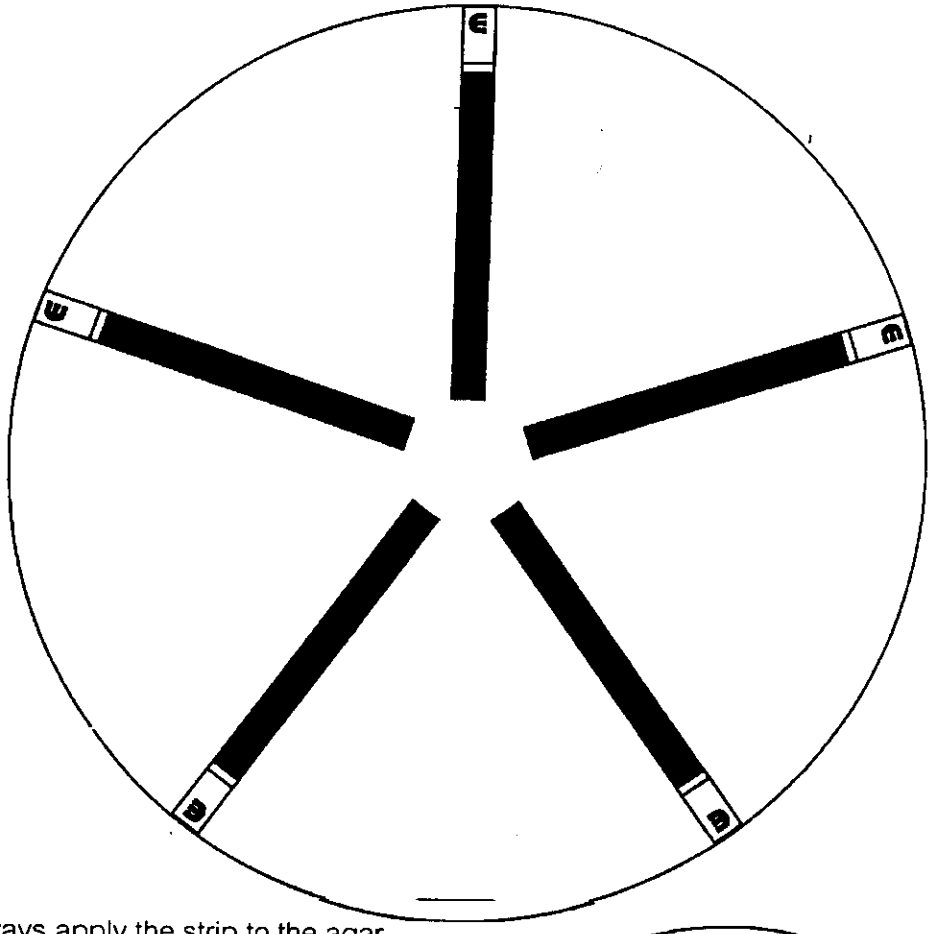
อายุ _____ เพศ _____ Ward _____

Specimen _____ วันที่เก็บ _____

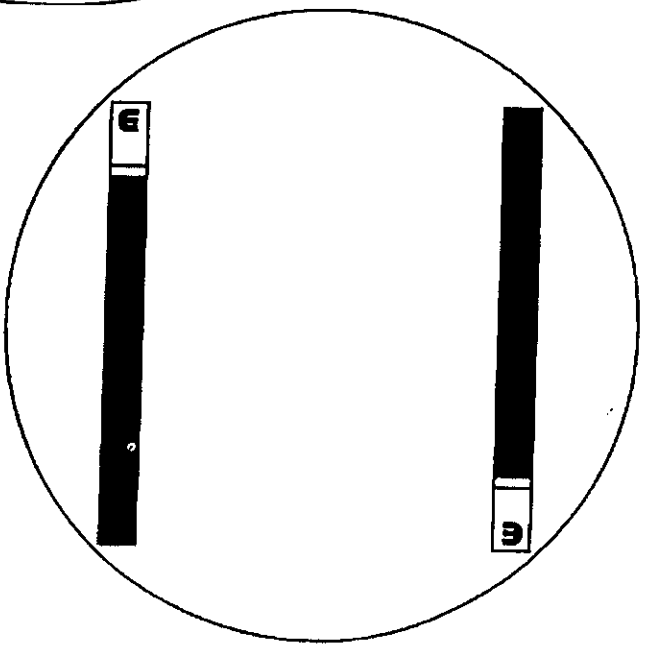
<u>หมายเหตุ</u> เขียนชื่อ รพ. และ No. (ใช้หมายเลขเดียวกับของ รพ.) ลงบน sticker ที่หลอดเก็บเชื้อทั้ง 2 ชนิด

APPENDIX C

Templates for Application of E test Strips



1. Always apply the strip to the agar Surface with the MIC scale facing upwards. Once applied, do not move the strip.
2. For fastidious organisms or very Susceptible species, use only 4 to 5 strips on a 150 mm plate and 1 to 2 strips on a 90 mm plate.
3. Strips can be applied with your fingers, forceps, the E test Applicator or Vacuum Pen.



APPENDIX D

E test Reading Guide

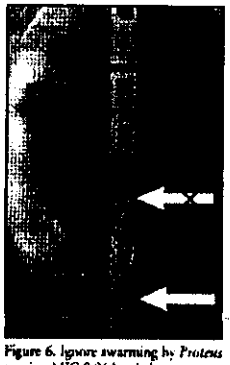


Figure 6. Ignore swarming by *Proteus* species. MIC 0.064 µg/ml.

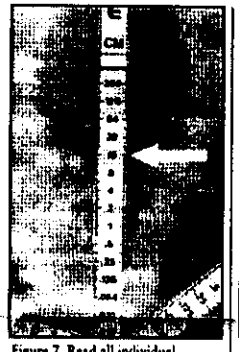


Figure 7. Read all individual colonies in clindamycin ellipses for anaerobes. MIC 16 µg/ml.

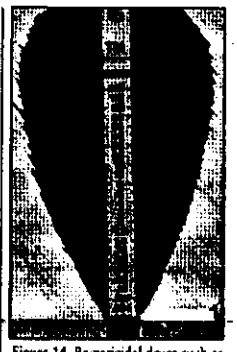


Figure 14. Bactericidal drugs such as aminoglycosides give sharp "crisp" ellipses. MIC 0.064 µg/ml.

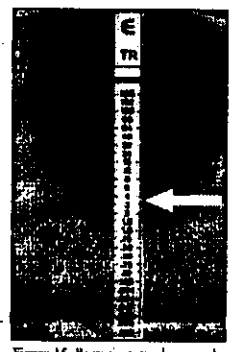


Figure 15. Bacteriostatic drugs such as trimethoprim and sulphonamides can give diffuse edges. Read at 80% inhibition. MIC 3 µg/ml.

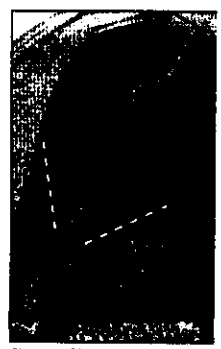


Figure 16. ß lactamase inhibitors at cer tant levels can extend the ellipse below the MIC due to its intrinsic activity. Extrapolate the upper curvature towar the strip to get the MIC. MIC 0.75 µg

RESISTANCE MECHANISM RELATED EFFECTS

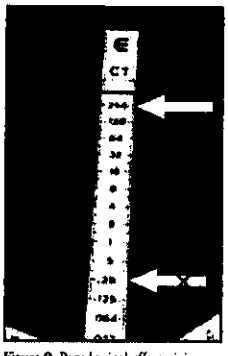


Figure 9. Paradoxical effect giving inhibition at low MIC with regrowth at higher MIC. MIC > 256 µg/ml.

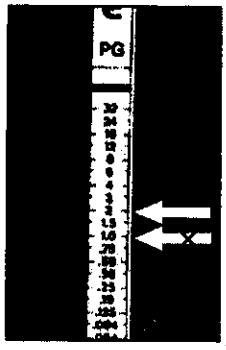


Figure 10. Scrutinize pneumococcal end points carefully to pick up all microcolonies. Tilt the plate and/or use a magnifying glass. MIC 2 µg/ml.

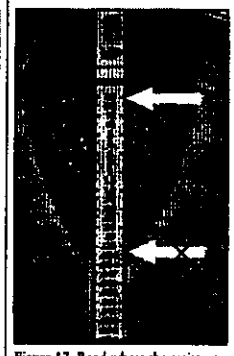


Figure 17. Read where the resistant subpopulation is completely inhibited. MIC >32 µg/ml.

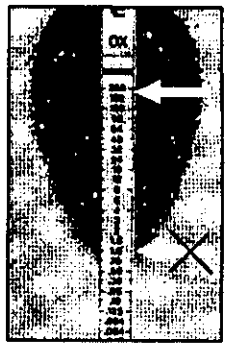


Figure 18. Isolated colonies due to low-level mutation. MIC >256 µg/ml.

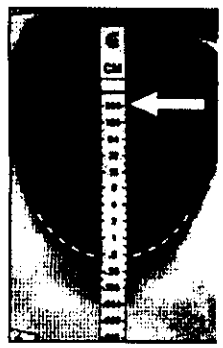


Figure 19. "Dip" effect due to inducible macrolide resistance. Extrapolate the ellipse towards the strip to get the MIC, i.e. 0.38 µg/ml. The strain also has colonies at the upper range of the strip. MIC > 256 µg/ml.

TECHNICAL & HANDLING EFFECTS

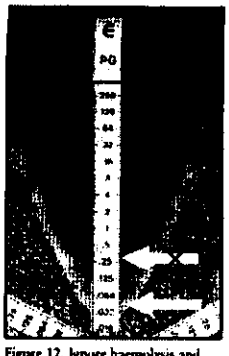


Figure 12. Ignore haemolysis and read where growth is inhibited. MIC 0.032 µg/ml.

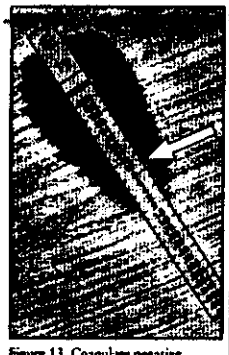


Figure 13. Coagulase negative staphylococci can show trailing at the end point due to glycopeptide resistant subpopulations. MIC 12 µg/ml.

Figure 20. Intersection between MIC markings. Read the next higher value. MIC 0.19 µg/ml.

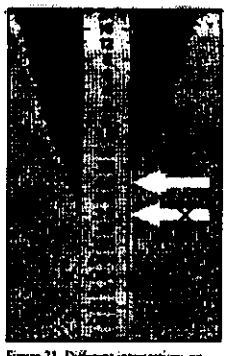


Figure 21. Different intersections on either side of the strip. Read the higher value; MIC 0.5 µg/ml. If the difference is > 1 dilution, repeat the test.

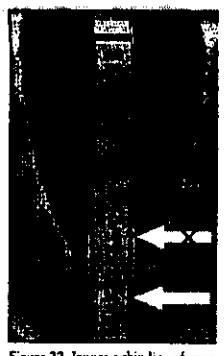


Figure 22. Ignore a thin line of grow at the edge of the strip caused by organisms growing in a tunnel of water. MIC 0.25 µg/ml.

APPENDIX E

Clinical Data Collection Form

Name:	HN: Patient Research # :
Admit Date: Discharge Date:	Patient died: Y / N Date of death:
Ward of Admission:	Admit ICU Date: Discharge from ICU date:
CC: PI:	Recent admission date: Recent discharge date:
Age: Sex: 1=M 2=F Wt: Ht:	Diagnosis:

Co-morbidities (circle):

1=Diabetes	2=Asthma/COPD	3=HIV Infection
4=ESRD/CRI	5=Hepatitis/Cirrhosis	6=Malignancy
7=Neutropenia	8=HTN	9=CAD
10=PVD	11=IVDA	12=EtOH
13=tobacco	14=radiation	15=IV cath
16=foley	17=Prior ICU	18=Other

Location PTA (circle):

1=home 2=transfer from hospital 3=correction facility 4=homeless
5=nursing home 6=other

Presumed or known site of infection

Source (circle all that apply)

1. Blood (primary bacteremia or unknown) 2. Intraabdominal (biliary tract)
3. Intraabdominal (intestine tract) 4. Pleural (pneumonia or respiratory tract)
5. CNS. 6. Urinary tract
7. Pelvis 8. Peritoneum
9. Wound 10. Other

Prior Antibiotic Use:

Antibiotic	Prior to admission (PTA)	Total # days of tx PTA
1=PCNs	1=Y 2=N	
2=1st gen. Ceph.	1=Y 2=N	
3=2nd gen. Ceph.	1=Y 2=N	
4=3rd gen. Ceph.	1=Y 2=N	
5=4th gen. Ceph.	1=Y 2=N	
6=Quinolone	1=Y 2=N	
7=Aminoglycoside	1=Y 2=N	
8=Carbapenem	1=Y 2=N	
9=Monobactam	1=Y 2=N	

Antibiotic Treatment

Start Date	Specific Antibiotic (drug, dose, route, schedule)	Stop Date	Tx cont'd as outpatient
			1= Y 2=N
			1= Y 2=N
			1= Y 2=N
			1= Y 2=N
			1= Y 2=N
			1= Y 2=N
			1= Y 2=N
			1= Y 2=N
			1= Y 2=N
			1= Y 2=N
			1= Y 2=N

Laboratory Data : Cultures

Culture	Date	Site*	Organism	PCNs	cefotaxime	ceftriaxone	Vanco.	other
1.								
2.								
3.								
4.								
5.								

Site*: 1=blood 2=pleural fluid 3=sputum 4=CSF 5=joint 6=ascites fluid 7=other

Clinical assessment

	Baseline	Day2	Day3	Day7	Day14	EOT	Discharge
Data not avail.	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Date							
Tmax (C^{o})							
WBC							
BP							
RR							
HR							
Pulse Ox							
O_2tx (Y/N)							
Chest x-ray							
SAPS II score							
Status**							

Status** : 1=same 2=improved 3=resolved 4=worse 5=undetermined 6=died

Definitions

1. Obtain data with +/- 24 hours of assessment time. Use worst values obtained within that time frame
2. If patient unavailable at assessment time, circle N/A
3. EOT=end of therapy

Days till resolution of temperature: _____

Day till resolution of WBC (<12,000/mm^3): _____

Outcome Measures

1. Was patient discharge? 1=Y 2=N 2. If discharged, was patient re-admitted within 3 months? 1=Y 2=N 3. Was it related to *S.pneumoniae*? 1=Y 2=N	Death occurred within 7 days of initial *S.pneumoniae* 1=Y 2=N Death related to *S.pneumoniae* : 1=Y 2=N
Final Clinical Outcome: 1=clinical success 2=failure 3=undetermined	Final Microbiological Outcome: 1=eradicated 2=persisted 3=undetermined

APPENDIX F

Simplified Acute Physiology Score (SAPS) II

Variable[a]	Points Variable Value					
Age (years)	0 <40	7 40-59	12 60-69	15 70-74	16 75-79	18 ≥80
Heart rate (beats/minute)	11 <40	2 40-69	0 70-119	4 120-159	7 ≥160	
Systolic blood pressure (mmHg)	13 <70	5 70-99	0 100-199	2 ≥200		
Body temperature (°C/°F)			0 <39/102.2	3 ≥39/102.2		
Pao_2 [b] ($mmHg/FiO_2$)	11 <100	9 100-199	6 ≥200			
PaO_2 [b] (kPa/FiO_2)	11 <13.3	9 13.3-26.5	6 ≥26.6			
Urinary output (L/d)	11 <0.500		4 0.500-0.999	0 ≥1.000		
Serum urea level (mmol/L, g/L) or Serum urea nitrogen level (mg/dL)				0 <10, <0.6 <28	6 10.0-29.9, 0.6-1.79 28-83	10 ≥30.0, ≥1.80 ≥84
WBC count ($10^3/mm^3$)	12 <1.0			0 1.0-19.9	3 ≥20.0	
Serum potassium (mmol/L)[c]			3 <3.0	0 3.0-4.9	3 ≥5.0	
Serum sodium level (mmol/L)		5 <125		0 125-144	1 ≥145	
Serum bicarbonate level (mEq/L)		6 <15	3 15-19	0 ≥20		
Birilubin level (µmol/L, mg/dL)				0 <68.4, <4.0	4 68.4-102.5, 4.0-5.9	9 ≥102.6, ≥6.0
Glasgow Coma Score	26 <6	13 6-8	7 9-10	5 11-13	0 14-15	
Chronic disease					9 metastatic cancer	10 hematologic malignancy	17 AISD
Type of admission				0 scheduled surgery	6 medical	8 unscheduled surgery

Total SAPS II Score = _____ points

[a] FiO_2 = fraction of inspired oxygen; kPa = kilopascal; WBC = white blood cell; AISD = acquired immunodeficiency syndrome

[b] Only if ventilated or continuous pulmonary artery pressure

[c] Unit correction to SAPS II

APPENDIX G

Pediatric risk of mortality (PRISM) score

Variable	Age Restrictions and Ranges		Score
Systolic BP (mmHg)	Infants	Children	
	130-160	150-200	2
	55-65	65-75	
	>160	>200	6
	40-54	50-64	
	<40	<50	7
Diastolic (mmHg)	All ages		
	>110		6
HR (beats/min)	Infants	Children	
	>160	>150	4
	<90	<80	
Respiratory rate (breath/min)	Infants	Children	
	61-90	51-70	1
	>90	>70	5
	apnea	apnea	
PaO_2/FiO_2[a]	All ages		
	200-300		2
	<200		3
$PaCO_2$[b] (torr)	All ages		
	51-65		1
	>65		5
Glasgow Coma Score[c]	All ages		
	<8		6
Pupillary reaction	All ages		
	Unequal or dilated		4
	Fixed and dilated		10
PT/PTT	All ages		
	1.5 x control		2
Total bilirubin (mg/dL)	>1 mo		
	>3.5		6
Potassium (mEq/L)	All ages		
	3.0-3.5		1
	6.5-7.5		
	<3.0		5
	>7.5		
Calcium (mg/dL)	All ages		
	7.0-8.0		2
	12.0-15.0		
	<7.0		6
	>15.0		
Glucose (mg/dL)	All ages		
	40-60		4
	250-400		
	<40		8
	>400		
Bicarbonate[d] (mEq/L)	All ages		
	<16		3
	>32		

[a]Cannot be assessed in patients with intracardiac shunts or chronic respiratory insufficiency; requires arterial blood sampling.

[b]May be assessed with capillay blood gases.

[c]Assessed only if there is known or suspected CNS dysfunction; cannot be assessed in patients during iatrogenic sedation, paralysis, anesthesia, etc. Scores <8 correspond to coma or deep stupor.

[d]Use measured values.