

**Antibiotic Stewardship  
Program (ASP)  
CHRISTUS SETX**

# Program Goals

## I. Judicious use of antibiotics

- Decrease use of broad spectrum antibiotics and de-escalate use based on clinical symptoms
- Therapeutic duplication: Decrease use of multiple antibiotics with the same mechanism of action
- Choose and recommend the most appropriate antibiotics on the basis of culture and sensitivity reports

# Program Goals

- Monitor peaks and troughs (when applicable) to ensure proper dosing and reduce the incidence of side effects due to increased levels of the antibiotics.
- Monitor levels to ensure that the antibiotic is appropriately dosed to avoid sub-therapeutic dose, which can increase the risk of resistance
- Avoid antibiotic-drug interactions

# Program Goals

## II. Decrease Resistance by Overuse of Antibiotics

Re-evaluate the patients who are on the same antibiotics for 7 days.

- Change the antibiotics if no clinical improvement
- Discontinue the antibiotics if patient is better clinically and the acute course of therapy is complete.
- Change the antibiotics to oral route if clinically appropriate and oral route available

# Program Goals

## III. Monitor the Use and Prescribing of Antibiotics in the Out-patient setting

- SETX and Louisiana Regional Antibiotic Stewardship Team created the Outpatient Treatment Guidelines for some commonly encountered disease states/ailments for the Emergency Department physicians
- These guidelines are incorporated in the CPOE order sets

# Outpatient Treatment Guidelines

## UNCOMPLICATED UTI

Length of therapy varies based on source, typically around 5-7 days

- 1) Bactrim DS 1 tab PO q12 hours
- 2) Ciprofloxacin 500mg PO q12 hours
- 3) Augmentin 875/125 One tab PO q12 hours
- 4) Nitrofurantoin 100mg PO q12 hours - if allergic to other options (can't use in pyelo, check renal function)

## COMMUNITY ACQUIRED PNEUMONIA

### No comorbidities

- 1) Azithromycin 500mg PO x1, then 250mg PO x4 days
- 2) Doxycycline 100mg PO q12 hours x5 days

### With comorbidities (elderly, COPD, diabetes, etc.)

- 1) Levofloxacin 750mg PO q24 hours x5 days
- 2) Azithro as above + Cefdinir 300mg PO q12 hours x7 days

## CELLULITIS (usual duration 7-10 days)

### Purulent (MRSA suspected)-

- 1) Incision and drainage of abscess is key
- 2) Doxycycline 100mg PO q12 hours
- 3) Bactrim DS 1-2 tabs PO q12 hours
- 4) Clindamycin 600mg PO q8 hours (lower on the list due to resistance issues)

### Non-purulent (MRSA not suspected)

- 1) Dicloxacillin 500mg PO q6 hours
- 2) Ceftin 500mg PO q12 hours (higher serum concentration and less frequent dosing than Keflex)
- 3) Clindamycin 600mg PO q8 hours (for PCN allergic)

## Sexually Transmitted Diseases

### Chlamydia (If identified,

always treat for gonorrhea as well)

- 1) Azithromycin 1gram PO x1 dose
- 2) Doxycycline 100mg PO q12 hours x7 days (unless pregnant)

### Gonorrhea

- 1) Ceftriaxone 250mg IM x1 + Azithromycin 1gram PO x1

### Syphilis

#### 1. Primary

- 1) Bicillin L-A 2.4 million units IM x1
- 2) Doxycycline 100mg PO q12 x14 days
- 3) Azithromycin 2grams PO x1 dose

#### 2. Secondary- same as Primary

### Pelvic Inflammatory Disease

Ceftriaxone 250mg IM x1+Metronidazole 500mg PO q12 hours x14 days + Doxycycline 100mg PO q12 hours x14 days

# P&T Committee

## Role of Pharmacy & Therapeutics Committee

- Antibiotic classes are reviewed annually with site-specific Antibiogram profiles
- Restrict the use of certain antibiotics based on the Antibiogram profiles
- Restrict the use of certain antibiotics to Infectious Disease physicians and selected physicians with clinical pharmacy oversight.
- Implement Therapeutic Interchange programs to minimize the exposure and preserve the efficacy of antibiotics over time.

# Clinical Pharmacist

## Role of Clinical Pharmacist in the Stewardship Program

- Monitor selected antibiotics on a daily basis
- Renal dosing for select antibiotics for renal function
- Daily C.difficile monitoring and review
- Antibiotics usage through the Emergency Department monitored and evaluated for appropriate therapy
- Consults for managing patients' antibiotic regimens (peak, trough whenever applicable)



# Program Integration

The Antibiotic stewardship program at our facility is integrated into the multi-disciplinary rounding program which occurs on a daily basis and/or multiple times a week. In the critical care units, the team rounds on every patient five days per week.

The team includes:

- Intensivist (Critical Care physician)
- Infection Control representative
- Charge nurse
- Clinical Pharmacist
- Case manager
- Respiratory Therapy supervisor
- Other ancillary depts. (PT/OT, Nutrition, etc)

# Program Integration

On the other units, the multi-disciplinary team meets three days a week: Tuesday, Thursday and Friday

The team includes:

- Case Management – Director
- Clinical Pharmacist
- Case Managers
- Charge Nurse, Nurses
- Clinical Documentation Specialists
- Physical therapy supervisor
- Other ancillary departments

# Guidelines/Restrictions

Examples of protocols implemented at Christus SETX Hospitals:

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| <ul style="list-style-type: none"><li>• <b>Antibiotic Formulary Restrictions</b></li><li>• <b>Assessment of Appropriateness of Antibiotics for Community-Acquired Pneumonia</b></li><li>• <b>Assessment of Appropriateness of Antibiotics for Skin and Soft Tissue Infections</b></li><li>• <b>Assessment of Appropriateness of Antibiotics for Urinary Tract Infections</b></li><li>• <b>Care of the Patient with Clostridium difficile (C.-diff)</b></li></ul> | <ul style="list-style-type: none"><li>• <b>Guidelines for Antimicrobial Use in Adults</b></li><li>• <b>Guidelines for Antimicrobial Use in Pediatrics</b></li><li>• <b>Plan for Parenteral to Oral Antibiotic Conversion</b></li><li>• <b>Preauthorization Requirements for Specific Antimicrobials</b></li><li>• <b>Use of Prophylactic Antibiotics</b></li></ul> |
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# Antimicrobial Resistance Monitoring

- Annual antibiogram created for each facility
- Antibiogram cards are printed and distributed to all physicians
- Antibiogram is electronically available on the CPOE module
- Sensitivity/Resistance patterns for selected bacteria are compared and ongoing
- Sensitivity data reviewed every other month during Clinical Services committee meeting

# Resistance Monitoring

## CHRISTUS Southeast Texas St. Elizabeth

MRSA Rate= 54%

ESBL reported =12 % of Klebsiella pneumoniae/ 9 % of E. coli

Staph aureus= 99 % susceptible to Rifampin

### Antimicrobial Sensitivity

JULY 2016 TO JUNE 2017

% Susceptible	Total # of isolates	β-Lactamase Susceptible	β-Lactamase Resistant		1st Gen	2nd Gen	3rd Gen	4th Gen	Amino-Glycosides	Quinolones	Macro- lide	Other Antibiotics										
		Ampicillin	Penicillin G	Oxacillin	Amp/sulbactam	Pip/Tazo	Aztreonam	Meropenem	Cefazolin	Cefoxitin	Ceftriaxone	Cefepime	Gentamicin	Amikacin	Ciprofloxacin	Levofloxacin	Erythromycin	Tetracycline	Tigecycline (TD)	Clindamycin	TMP/SMX	Vancomycin
Staph aureus	1066		46					46						85	34	93	100	74	98	100		
Staph epidermis	419		26					26						39	22	85	100	48	67	100		
Enterococcus faecalis	722	99	99											69	7	20	100					98
Enterococcus faecium	92	24	23											17	4	18	100					39
Strep. pneumoniae	40		38						100					95	42	74		78	48	100		
Acinetobacter baumannii	70					70			65	87	91	65	65									62
Citrobacter freundii	42			98	93	98			90	100	88	100	85	85			100					76
Citrobacter koseri	36			100	100	97	97	97	94	97	97	100	100	92	92			97				97
Enterobacter aerogenes	66			91	91	68			89	98	100	100	100	100				98				100
Enterobacter cloacae	126			88	83	97			81	100	98	100	93	94				99				84
E. coli	2024	40		78	92	91	100	79	85	88	96	87	100	67	67			100				64
Haemophilus influenzae	40	50							93					100								70
Klebsiella oxytoca	49			88	89	92	98	61	98	92	100	98	100	96	96			96				98
Klebsiella pneumonia	537			90	91	88	97	84	89	86	94	94	99	87	88			93				85
Proteus mirabilis	304	67		100	98	98	95		93	97	98	95	100	64	65							63
Pseudomonas aeruginosa	375			100	50	44				88	89	97	67	64								
Serratia marcescens	85			100	96	100				95	99	99	100	96	95			96				96

Stenotrophomonas maltophilia=94 % susceptible to TMP/SMX, 94 % to Levofloxacin with 34 isolates

\* indicates high dose Gentamicin

# Monitoring Antibiotic Usage

## Purchase data comparison

	2015			2016			2017		
	Spent (\$)	ADJ APD CMI	Cost/ APD	Spent (\$)	ADJ APD CMI	Cost/ APD	Spent (\$)	ADJ APD CMI	Cost/ AP D
<b>Jan</b>	\$125,531.66	14380	\$8.72	\$116,517.52	13431	\$8.67	\$82,667	17806	\$4.64
<b>Feb</b>	\$112,852.64	13910	\$8.11	\$117,791.03	13147	\$8.95	\$97,174	16014	\$6.07
<b>March</b>	\$105,632.55	13463	\$7.84	\$76,185.01	13490	\$5.64	\$73,557	17175	\$4.28
<b>April</b>	\$136,829.34	13636	\$7.84	\$56,303.68	13740	\$4.09	\$68,668	16784	\$4.09
<b>May</b>	\$145,873.51	13056	\$11.17	\$80,987.20	13635	\$5.93	\$76,754	16032	\$4.79
<b>June</b>	\$144,706.12	14090	\$10.27	\$80,249.34	13920	\$5.76	\$68,117	17436	\$3.91
<b>July</b>	\$136,306.54	13431	\$10.14	\$91,148.38	13540	\$6.73	\$95,505	16260	\$5.88
<b>August</b>	\$114,957.38	13147	\$8.74	\$87,076.45	14036	\$6.20	\$112,684	15049	\$7.50
<b>Sept</b>	\$129,723.59	13490	\$9.61	\$72,117.54	13018	\$5.53	\$78,737		
<b>October</b>	\$129,069.83	13740	\$9.39	\$73,489.66	13418	\$5.47	\$79,164		
<b>November</b>	\$99,041.59	13635	\$7.26	\$94,124.70	13794	\$6.82	\$149,578		
<b>December</b>	\$110,604.49	13920	\$7.94	\$112,117.82	14222	\$7.88			
<b>Total</b>	<b>\$1,491,129</b>	<b>163898</b>	<b>\$9.09</b>	<b>\$1,058,109</b>	<b>163391</b>	<b>\$6.47</b>	<b>\$735,863</b>		

# Antibiotic Automatic Stop Date

- All antimicrobials and antifungals will have a 7-day automatic *hard stop* (orders will fall off the profile)
- The physicians will be able to re-evaluate the clinical needs of the patient, either allowing the antibiotic to stop, or extend the duration of therapy, if indicated.
- Clinical Pharmacist monitors the antibiotic stop dates daily. A “Special Instructions” notification will be entered on the patient profile, indicating the specific antibiotic(s) will automatically be discontinued from the medication profile on a set date.

**DATE:** January 23<sup>rd</sup> 2016  
**TO:** CHRISTUS SOUTHEAST TEXAS Medical Staff  
**FROM:** Christus System Pharmacy & Therapeutics Committee  
**SUBJECT:** Automatic Stop Orders (ASO) for Antimicrobials & Antifungals  
**PRIORITY:** HIGH

In response to an increase in Multi-drug resistant organisms, the CDC recommends that all hospitals implement an Antibiotic Stewardship Program, The Joint Commission has also created new standards requiring the development of a coordinated Antimicrobial Stewardship program to improve patient outcomes, reduce microbial resistance and decrease the spread of infections caused by antibiotic resistant organisms.

As of February 1<sup>st</sup> 2017, the Christus System Pharmacy & Therapeutics Committee (SPTC) will implement “time-sensitive automatic stop orders” (ASO) of 7 days for all antibiotics and antifungal orders.

If patient specific therapy requires longer duration of therapy than the 7-day ASO, a new stop-date must be manually entered; otherwise the 7 day default ASO will be in place.