

# Challenges to Implementing an Antimicrobial Stewardship Program in a Community Pharmacy Setting

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# My Experience

- ▶ Director of clinical services for AuBurn Pharmacies
  - ▶ Independently owned chain of 25 retail pharmacies and 3 long term care pharmacies in Eastern Kansas and Western Missouri
- ▶ Pharmacist-in-charge of Anderson County Hospital Pharmacy (Saint Luke's Health System regional facility)
  - ▶ Critical access hospital in Garnett, Kansas
  - ▶ Member of the Saint Luke's antimicrobial stewardship committee
- ▶ Board certified Advanced Diabetes Manager

# Objectives


- ▶ Explain the differences between antimicrobial stewardship in the in-patient and out-patient settings.
- ▶ Review pharmacy reimbursement for antibiotics and the impact of Direct and Indirect Remuneration (DIR) fees .
- ▶ Evaluate how pharmacy reimbursement for antibiotics compares to the national average cost to dispense.
- ▶ Explain how consumer education level impacts appropriate antibiotic use.

# Inpatient vs. Outpatient

	Inpatient	Outpatient
Pertinent patient information readily available	YES	NO
Evaluate renal function (Calculate CrCl, GFR)	YES	NO
Diagnosis (UTI, Pneumonia, Sepsis etc)	YES	NO
Cultures and Susceptibilities	YES	NO
Access to dedicated infections disease experts	YES	NO
Vital sign monitoring (In/Out, temperature, symptoms)	YES	NO
Regular lab work (WBC's, sed rate, procalcitonin)	YES	NO
Guaranteed medication adherence	YES	NO

# Typical Out-patient Prescription

**New Rx**

Patient:  06/13/2019

Work: Fax:  
DOB:10/09/1956 Gender:F SSNO:

Drug: cephalexin 500 mg capsule  
NDC: 00093314701  
Quantity: 40 Capsule


Sig: Take 1 capsule (500 mg total) by mouth 4 (four) times a day.

Refills: 0 0-Substitution Allowed

Prescriber: Kimball MD., Ross  
536 W 4th Ave  
Garnett, KS 66032  
Phone:(785) 448-2674 Fax:(785) 448-3091  
FK0834615  
SSID:6420836705005 NPI:1982876512 Lic:  
Order Number:239298673:2878386183

Notes:  
Transmitted: 06/13/2019 12:02:26:70 Printed: 06/13/2019 12:13pm  
eScript Transmitted To: Auburn Pharmacy Inc 429 N Maple, Garnett, KS 66032 Store  
ID:1714713

**New Rx**

Patient:  06/12/2019

Work: Fax:  
DOB:09/09/1925 Gender:F SSNO:

Drug: Levaquin 500 mg oral tablet  
NDC: 50458092550  
Quantity: 14 Tablet

Sig: 1 tab(s) Oral q24 hr,x14 day(s)

Refills: 1 0-Substitution Allowed

Prescriber: Swanson MD., Evan  
Agent: Woodson, Yonna  
RMH Specialty Care, 1428 S. Main Street Suite #4  
Ottawa, KS 66067  
Phone:(785) 229-8882 Fax:(785) 229-3337  
BS6014029  
SSID:6292780643007 NPI:1144223056 Lic:  
Order Number:CERN792920131.S6292780643007

Notes:  
Transmitted: 06/12/2019 10:11:41:73 Printed: 06/12/2019 10:15am  
eScript Transmitted To: Auburn Pharmacy Inc 429 N Maple St, Garnett, KS  
660321074 Store ID:1714713

Images of typical electronically transmitted prescriptions to demonstrate the lack of information provided to pharmacists to assess appropriate antibiotic use.

Evaluating appropriate use with this information is not possible.

# In-patient data readily available

ACH MS-107-01  
Cur Loc: ACH US  
Age/Sex: 67 years / F

G Identity: Female  
Preferred Pronoun: She, Her, Hers

On Oral Chemo: N... BSA: 1.68 m<sup>2</sup>  
Ht: 5' 5"  
Wt: 62.2 kg  
CrCl: 122.8 mL/min

Allergies  
Tramadol  
Penicillin  
Latex

Postmenopausal

cefepodoxime (VANTIN) tablet 200 mg

200 mg, Oral, 2 times daily with meals, Indications: UTI, First dose on Fri 6/7/19 at 1730, For 21 doses  
Give with food

⌚ Expires in 2 hours 10 minutes.

Anderson County Hospital															
8 Hrs: ◀	06/12 23-07	06/13 0700 - 06/14 0659			06/14 0700 - 06/15 0659			06/15 0700 - 06/16 0659			06/16 0700 - 06/17 0659			06/17 0700 - 06/18 0659	
	07-15	15-23	23-07	07-15	15-23	23-07	07-15	15-23	23-07	07-15	15-23	23-07	07-15	15-23	
<b>Antibiotics</b>															
Cefepodoxime ORAL (mg)		200	200		200	200		200	200		200	200			Cefepodoxime ORAL (mg)
doxycycline hyclate ORAL (mg)		100	100		100	100		100	100						doxycycline hyclate ORAL (...)
<b>Vitals</b>															
Temperature	36.3 (97.3)			36.7 (98)			36.8 (98.2)			36.7 (98)			36.4 (97.6)		Temperature
Heart Rate	97	86		105	88		86	82		80			97		Heart Rate
Resp Rate	18			16			16			16			18		Resp Rate
<b>Intake</b>															
P.O.		220	220	170	340	1150		160	600	150	185	185	400	220	P.O.
<b>Total In</b>		220	220	170	340	1150		160	600	150	185	185	400	220	<b>Total In</b>
<b>Output</b>															
Urine	250	350		400	500	200	350		600	350		300	350	500	Urine
Stool											1				Stool
<b>Total Out</b>	250	350		400	500	200	350		600	350	1	300	350	500	<b>Total Out</b>

## Procalcitonin

Order: 267967586

Procalcitonin	Ref Range & Units	6/13/19 1226
	0.00 - 0.10 ng/mL	8.46 ▲
Comment: PCT Value	Interpretation	
0.10 - 0.25	Low risk for bacterial infection	
>0.25	Increased risk lower respiratory infection	
>0.50	Increased risk sepsis	
>2.00	High risk sepsis	

If Procalcitonin is >0.25, repeat in 48 hours to guide antibiotic cessation in lower respiratory tract infection.  
If Procalcitonin is >0.5, repeat in 24 hours to guide antibiotic cessation in sepsis.  
Procalcitonin is most useful when levels are performed serially with consideration of clinical data.  
Decisions regarding antibiotic use should not be based exclusively on procalcitonin levels.

## Culture, Urine

Order: 267142061

Component 6/6/19 0055  
Isolate 1 >100,000 CFU/ml !  
Isolate 1 Enterococcus faecalis !

### Susceptibility

	Enterococcus faecalis
	Not Specified
AMPICILLIN	1 Sensitive
VANCOMYCIN	1 Sensitive

Specimen Collected: 06/06/19 00:55  
Last Resulted: 06/10/19 08:59

[Lab Flowsheet](#) [Order Details](#) [View Encounter](#)  
[Lab and Collection Details](#) [Routing Result](#) [History](#)

Screen shots from hospital management software that displays readily available information for providers to evaluate appropriate antibiotic use.

According to Nick Bennett, antimicrobial stewardship director for Saint Lukes Health System, evaluating appropriate use in a hospital setting takes 5 to 15 minutes per case even with all the pertinent information readily available.



# Challenges for Outpatient Stewardship Policies

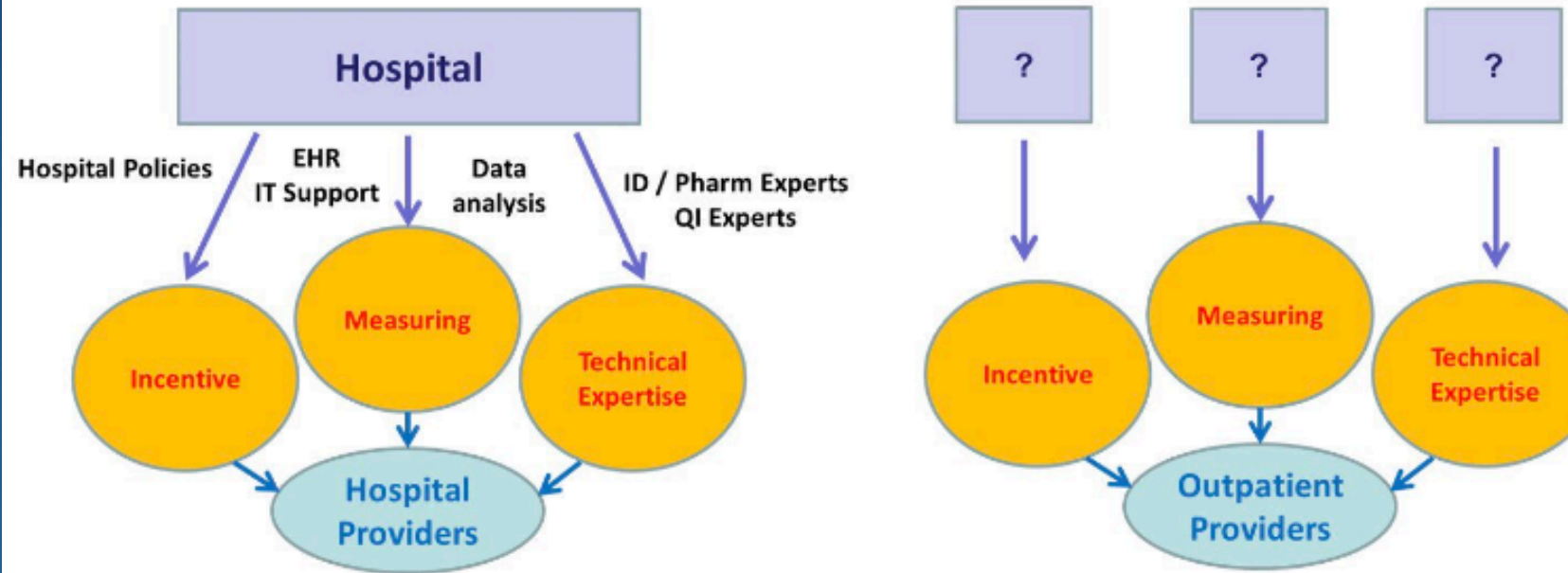


Diagram representing the differences between antimicrobial stewardship programs ran in an in-patient hospital setting versus an out-patient setting.

Source:

David Hyun, MD

Senior Officer, The Antibiotic Resistance Project

The Pew Charitable Trusts

Washington, DC

# Current pharmacy reimbursement for antimicrobial prescriptions

Year	Total Margin	DIR Adjusted Margin	Claim Count	Avg Margin Rx	DIR Adjusted Avg Margin Rx	DIR Percentage Reduction in Avg Margin/Rx
2018	\$2,425,489.21	1621916.42	308350	\$7.87	\$5.26	33.13%
2019	\$1,547,257.86	850908.19	127225	\$12.16	\$6.69	45.01%
<b>Grand Total</b>	<b>\$3,972,747.07</b>	<b>\$2,472,824.61</b>	<b>435575</b>	<b>\$9.12</b>	<b>\$5.68</b>	<b>37.76%</b>

Average cost to dispense for community independent pharmacies is \$10.79 per prescription

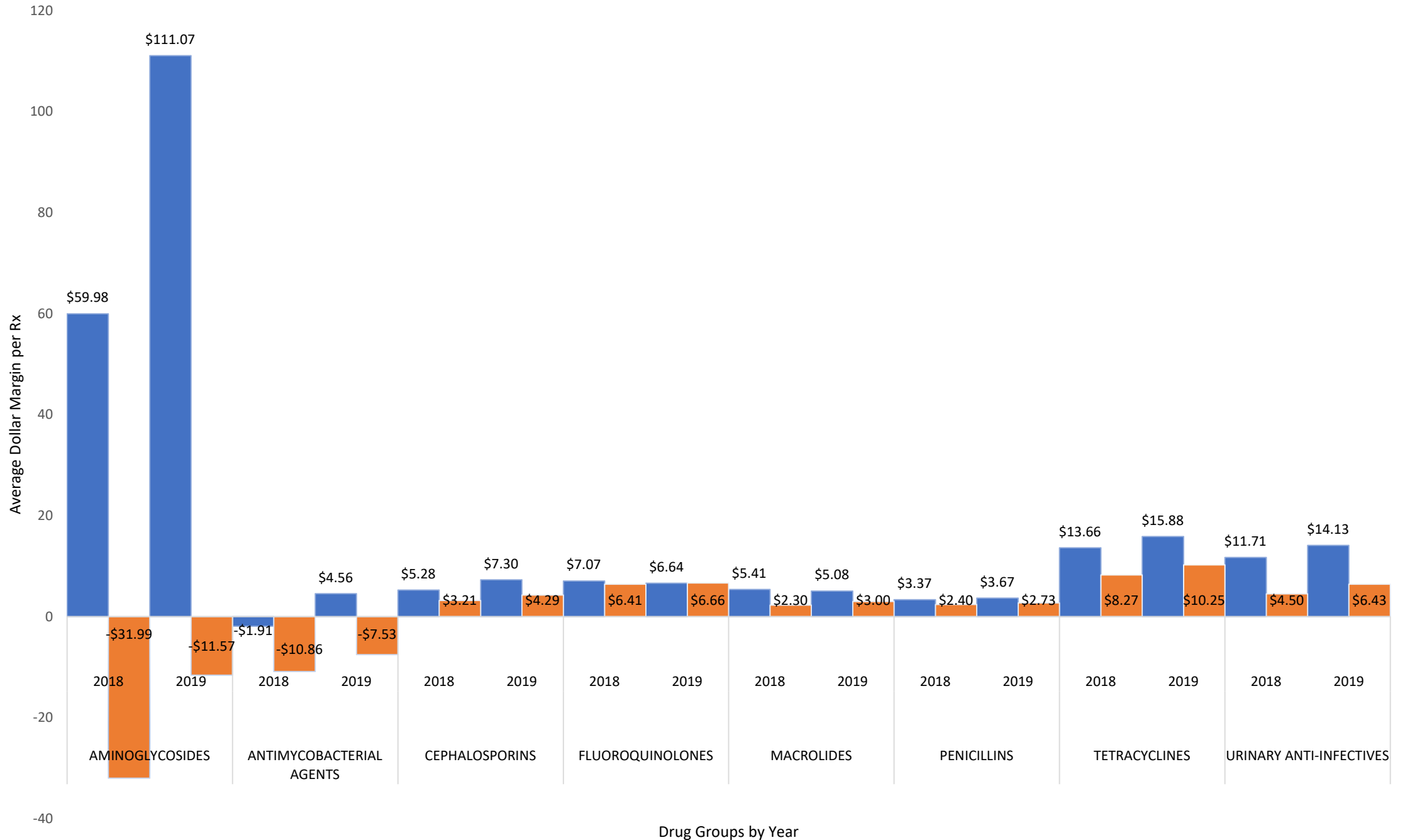
*NCPA Digest 2018*

Table of average pharmacy reimbursement for antibiotic prescriptions from 2018 and 2019 with gross margin before and after levied DIR fees.

DIR fees are monies recouped from contract pharmacies three to six months after point of sale.

Data from MaxCare and PPOK

# DIR Impact on Antibacterial Antibiotic Drug Groups



# Case study: Insurance barrier

- ▶ ED provider evaluates patient for UTI on 4/29/19
  - ▶ Collects UA – isolates *Enterococcus faecium*
  - ▶ Writes Rx for cephalexin 500mg twice daily for 10 days
- ▶ Susceptibilities returned and ABS director consulted on 5/2/19
  - ▶ Recommendation of linezolid 600mg twice daily for 7 days or a single dose of fosfomycin 3gm
  - ▶ Both meds prescribed and both rejected by insurance requiring prior authorization (PA)
  - ▶ ED provider notified and they deferred to PCP to complete PA
- ▶ No resolution by 5/3/19
  - ▶ Patient worsened and was admitted for aggressive IV antibiotic therapy

# Education barrier

- ▶ Study to assess general knowledge of appropriate antibiotic use completed by Mary Beth Seipel, PGY-1 community pharmacy resident for Balls Foods and the University of Kansas showed:
  - ▶ Over 30% of non-college educated participants believed antibiotics work on most cough and colds (compared to 16% with college degree)
  - ▶ 43% of non-college educated participants believed antibiotics killed viruses (compared to 20% with college degree)
- ▶ Conclusions:
  - ▶ Knowledge of appropriate antibiotic use was influenced by education level
  - ▶ Community based antibiotic stewardship programs would likely increase knowledge and lead to more appropriate antibiotic use

# In conclusion...

- ▶ Data available in an in-patient setting to evaluate antibiotic appropriateness is NOT currently available in an out-patient setting.
- ▶ In-patient antibiotic stewardship programs are supported by robust hospital policies, IT and data analysis departments and infections disease experts not available in most out-patient settings.
- ▶ Reimbursement for antibiotics does not allow for pharmacies to invest the time into evaluating antibiotic appropriateness.
- ▶ Consumer education about appropriate antibiotic use needs to increase and pharmacist led community antibiotic stewardship programs could be a solution.



Thank you

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