

Clinically-relevant Microbiology: short course

- The body's microbial garden:
 - Bacteria are invisible and ubiquitous (they're everywhere)
 - Humans and our microbial partners are evolving together
 - # of non-human cells (resident microbiome) is 10x # human cells
 - Example: urine cultures with multiple organisms or low colony counts (25-50,000) are more likely to represent resident micro-flora than infection
- There are 2 kinds of cultures:
 - From normally sterile sites (e.g. blood)
 - From sites with normal microflora (e.g. urine, sputum, throat)



Integrating 3 data sources

1. Laboratory
2. Pharmacy
3. Standardized Clinical

PtName/order practitioner	Lab spec#/ Dx codes	Report date	Organism/colony count	Antibiotic/prescriber name	Dispense date	Days-of-Rx	McGeer Y/N	Notes
Joan xxxxx Dr. Bxxxx	23766036 780.1	7/6/2015	Enterococcus Species 100,000	Cipro Rocephon Vancomycin	7/4/2015 7/5/2015 7/11/2015	1 3 6	No	Hallucinating and change in behaviors
Patricia yyyv Fatima Tyyyy NP	23765823 297.1	7/10/2015	E. Coli >100,000 Gram positive cocci	Ceftriaxone	7/12/2015	7	No	Increase behaviors, delusional, refusing meds
Rosario Hxxxx Fatima Tyyyy NP	23298808	7/15/2015	Proteus Mirabilis 50,000	None			No	Increased behaviors
June xxxxx Dr. Oyyyyy	23830849	7/15/2015	Enterococcus Species 50,000	None			No	Elevated temp times 1 (99)
Cxxxxx, Betty Fatima Tyyyy NP	23765983 788.1	7/17/2015	E. Coli >100,000 Gram positive cocci <10,000	Cipro	7/18/2015	5	Yes	

Monthly Data Sheet

McGeer Criteria – UTI definition

- Positive urine culture:
 - at least 100,000 cfu/ml of one organism
- Positive UTI clinical picture:
 - at least one of the following ...
 - a. acute dysuria
 - b. fever OR leucocytosis AND one of:
 1. acute CVA pain or tenderness
 2. suprapubic pain
 3. new or marked increase in incontinence/urgency/frequency
 4. gross hematuria
 - c. IF absence of fever or leucocytosis THEN two(2) or more of 1-4 above.

Managing the Conversation with Prescribers (MD or NP)

- UTI SBAR is your guide
- Use whenever a urine culture is ordered OR a urine antibiotic is prescribed
- Facilitates getting ducks-in-a-row before calling the doctor
- Not intended to be completely filled out



SBAR Protocol for Managing UA/C&S in Long Term Care

Resident Name _____

Date/Time _____

Nurse _____

Physician/NP/PA _____

Phone _____

S – Situation

I am calling about <name, location – see above>.

The patient's code status is <code status>.

The situation I am calling about is a <change in condition OR positive urine culture>.

I have just assessed the patient personally:

Vital signs are: **Temp** _____ BP _____ / _____ Pulse _____ Resp _____

Resident complaints/reasons for UA C&S (check all that apply):

- Change in mental status from baseline
- Incontinence Frequency
- Dysuria (painful, burning, difficult urination) Suprapubic pain
- Costovertebral (CVA) tenderness or flank pain/tenderness (either side of spine below ribs)

B – Background

Active diagnoses:

Specify: _____

LABS RESULTS:

Recent urinalysis – date _____

Nitrite POSITIVE NEGATIVE

Leukocyte esterase POSITIVE NEGATIVE

Pyuria (WBC > 10 /LPF) POSITIVE NEGATIVE

Urine C&S: Colony count: _____ CFU/ml

Organism name: _____

Antibiotics: S _____

R _____

PRIOR TO ASSESSMENT

Advance directives for limiting treatment (especially antibiotics): NO YES

Medication Allergies: NO YES

Specify: _____

The resident is on Warfarin (Coumadin™) NO YES

The resident is diabetic: NO YES

Multidrug resistant organism: NO YES

Specify: _____

Resident Name _____

A – Assessment (apply McGeer criteria for UTI)

RESIDENT WITHOUT INDWELLING CATHETER:

- A POSITIVE CULTURE AND -

**ACUTE DYSURIA ALONE OR
FEVER (> 100°F or 2.4°F > baseline) OR Leucocytosis
AND AT LEAST ONE OF THE FOLLOWING THAT IS NEW OR
INCREASED**

- Urgency Frequency
- Suprapubic pain Gross hematuria
- Costovertebral angle tenderness
- Urinary incontinence
-

If accompanied only by fever, rule out other causes

RESIDENT WITH AN INDWELLING CATHETER:

- A POSITIVE CULTURE AND -

**AT LEAST ONE OF THE FOLLOWING THAT ARE NEW OR
INCREASED**

- Fever (> 100°F or 2.4°F > baseline)
- Costovertebral angle tenderness
- Rigors (shaking chills)
- New onset hypotension – no other cause
- Flank pain* or pelvic discomfort*
- Acute hematuria*
- Purulent discharge from around the catheter*

UTI protocol criteria are:

- Met (sufficient for active UTI)
- Not Met (insufficient for active UTI)

R – Recommendation

I am requesting that you <say what you would like to see done>.

- Start antibiotic RX
- Increase fluid intake and observe x 24 hrs.
- Other _____

Information reviewed with (provider name) _____ date/time _____

Family/POA notified (name) if needed _____ date/time: _____

48-hour Observation Pathway

- Use as an alternative to empiric antibiotic Rx for confusion/altered mental status
- 2 components:
 - Push fluids
 - Observe for change-of-condition
- Example order set:
 - Vital signs (Temp, BP ...) each shift x 24hr.
 - Offer resident ___ oz. water/juice every ___ hours.
 - Record fluid intake each shift x 48hr.

Nursing-centered antibiotic time-out

- “Stop and Watch” before initiating/requesting antibiotic Rx
- Review laboratory & clinical data
- Document rationale for antibiotic initiation
- Assess alternatives to antibiotic use





Antibiotic Stewardship Metrics

Scottsdale XXXX XXXXX – YYYY

4th Quarter 2014

<u>Metric</u>	<u>Results</u>
# Urine C&S orders	56
# Urine C&S positive	39
# Antibiotic Rx	24
# Rx with low colony count	10
# Meeting standardized clinical criteria	1 **
# Days of Antibiotic Therapy (DOT)	186
# Days of Inappropriate Therapy (IDOT)	TBA
# Antibiotic Rx - empiric	TBA
# C. difficile orders	10
# C. difficile positive	0

** Documentation often missing ... SBAR starting 1-2015



Dear <facility name> prescriber,

Over the past few months <facility name> has been accumulating data on antibiotic prescribing practices in urinary tract cultures as announced previously.

Attached is a report covering the <quarter> of <year>. This is aggregate data from all prescribers. Future quarterly reports will also be produced showing individual prescriber practices as well as the aggregate peer data.

The most important findings in this quarter are the following:

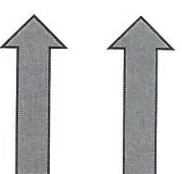
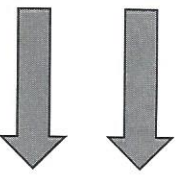
1. Nearly half (40%) of patients receiving antibiotics have low colony counts (25,000-50,000).
2. The majority (>90%) of antibiotics are being prescribed to treat asymptomatic bacteriuria.

Current prescribing guidelines recommend against treating asymptomatic bacteriuria generally and low colony counts in particular. Our goal over the next quarter is to substantially eliminate the practices listed above. This is consistent with current guidelines from both American Medical Directors Association (AMDA) and Infectious Disease Society of America (IDSA).

Thank you for your continued support of the Antibiotic Stewardship initiative.
<medical director name> Medical Director

1st Quarterly Results – pilot facilities

Stewardship Pilot Facilities	Facility 1	Facility 2	Facility 3
# Urine C&S orders	56	53	43
# Urine C&S positive	39	28	25
# Antibiotic Rx	24	18	20
# Rx with low colony count	10	9	11
# Meeting standardized clinical criteria	1	2	3
# Days of Antibiotic Therapy (DOT)	186	179	143
# Days of Inappropriate Therapy (IDOT)	TBA	TBA	115
# Antibiotic Rx - empiric	TBA	TBA	TBA
# C. difficile orders	10	9	1
# C. difficile positive	0	2	0





Sequential Quarterly Results – Facility 1

Scottsdale XXXX YYYY	4Q2014	1Q2015	2Q2015
# Urine C&S orders	56	31	37
# Urine C&S positive	39	15	19
# Antibiotic Rx	24	12	5
# Rx with low colony count	10	2	0
# Meeting standardized clinical criteria	1	(7)	1
# Days of Antibiotic Therapy (DOT)	186	88	36
# Days of Inappropriate Therapy (IDOT)	TBA	TBA	TBA
# Antibiotic Rx - empiric	TBA	TBA	TBA
# C. difficile orders	10	8	3
# C. difficile positive	0	1	1





Glxxxxxxx stewardship: results-to-date

Metric	4Q2014	1Q2015	2Q2015	3Q2015	4Q2015
# Urine C&S orders	94	63	26	27	21
# Urine C&S positive	65	46	12	16	10
(prescribing data - TBA)					
# C. difficile orders	12	15	6	3	9
# C. difficile positive	7	4	4	0	0
# ESBL positive	21	7	4	4	4

