Three Effective Acute Care Interventions

#1 Questioning the necessity of urinary cultures
#2 Ensure proper culturing techniques
#3 Encourage prompt transition from IV to PO antibiotics
#1 Educate Nurses Regarding ASB

What is asymptomatic bacteriuria (ASB)?

- A positive urine culture in a patient with no signs or symptoms of a urinary tract infection (e.g., dysuria, frequency, urgency, fever, flank pain)
How common is asymptomatic bacteriuria (ASB) and pyuria (urine containing ≥10 white blood cells per high powered field)?

- **Asymptomatic bacteriuria is common and often associated with pyuria**

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What patients with asymptomatic bacteriuria should be treated?

- The majority of patients with ASB and/or asymptomatic pyuria SHOULD NOT be treated
- Studies have demonstrated that treatment of ASB does not prevent urinary tract infections (UTIs), but is associated with adverse events related to antibiotic use and the development of future UTIs that are antibiotic resistant
- Exceptions:
  - Pregnant patients: treatment prevents pre-term labor and pyelonephritis
  - Patients about to undergo a urologic procedure in which mucosal bleeding is expected (not just urinary catheter placement): treatment prevents urosepsis

How can I prevent unnecessary treatment of asymptomatic bacteriuria?

- Do not order urine cultures unless your patient has signs and symptoms of a UTI, including in patients undergoing preoperative evaluation or patients with urinary catheters (except in pregnant patients or those about to undergo a urologic procedure in which mucosal bleeding is expected).
- Foul-smelling or cloudy urine does not indicate a UTI
- Mental status changes alone do not indicate a UTI
Order to Obtain Urine Culture

Will a urine culture change the plan of care?

Yes

No

Recommend discontinuation of urine culture
UA Performed in previous 24 hours?

Yes

Pyuria present (any of the following):  
- ≥ 3 WBC per HPF  
- Leukocyte esterase positive  
- ≥10 cells/mm³ or 10,000 cells/mL

Yes

Are any inappropriate indications present?  
1. Solely based on concerns regarding urine quality (i.e. color, smell sediments, turbidity)  
2. Standing order in the absence of appropriate indication (i.e. part of standard fever workup)  
3. Documenting clearing of bacteriuria after treatment in patient with improved symptoms (upcoming urologic procedure excluded)  
4. Screening including the following patients in the absence of symptoms: non-pregnant, elderly, diabetics, spinal cord injury, indwelling urine catheter, those requiring chronic intermittent catheterization, and > 3 months s/p renal transplant (recipient)  
5. "PAN" culturing in the absence of sepsis or specified symptoms  
6. Obtaining based on pyuria in asymptomatic patients

No

No

Recommend discontinuation of urine culture (in truly infected patients pyuria should generally be present)
Fever (≥ 38.5°C or ≥ 101.3°F) AND at least one of the following?
- New Tachycardia (> 100 bpm)
- Hypotension (< 90 mmHg systolic)
- Leukocytosis (>12K cells/mm³; not on steroids)
- Lactic Acidosis (> 2 mmol/L)
- Procalcitonin (≥ 0.25 ug/mL)

One of the following indications present?

1. Based on local findings suggestive of UTI (e.g., pelvic discomfort or flank pain)
2. For bacteriuria screening in asymptomatic patients with the following underlying comorbidities:
   a. Prior to urologic procedures
   b. Pregnant women (avoid urinary catheters if possible)
   c. Neutropenic (ANC < 500 cells/mm³)

Recommend discontinuation of urine culture

Effective Acute Care Interventions

#2 Ensure proper culturing techniques
- Have staff review procedure annually

#3 Encourage prompt transition from IV to PO antibiotics
- Incorporate with interdisciplinary rounds, antibiotic stewardship meetings, shift change report
Outpatient Antibiotic Stewardship

The Core Elements of Outpatient Antibiotic Stewardship
Facility Checklist
We did the following:
• Identified a walk-in physician champion that already supported antibiotic stewardship practices
• This individual provided routine e-mail and face-to-face communication with medical staff during project
• Clinical Lead also identified
We did the following:

- Distributed talking point tips from the CDC to medical staff and clinical staff
- Discussed talking points for front desk staff
- Updated triage books and reviewed with staff
We did the following:

- Created a report for patients with a visit encounter that had a problem of cough, bronchitis, or upper respiratory infection
- Cases were excluded if they also had a diagnosis of pneumonia or other common bacterial infection
- Goal: 10% walk-in reduction; 5% PCP reduction
We did the following:
• Poster board education for staff
• Face-to-face education for providers at operations meetings with data to reinforce practice
Viruses or Bacteria
What’s got you sick?

Antibiotics are only needed for treating certain infections caused by bacteria. Viral illnesses cannot be treated with antibiotics. When an antibiotic is not prescribed, ask your healthcare professional for tips on how to relieve symptoms and feel better.
<table>
<thead>
<tr>
<th>Common Condition</th>
<th>Common Cause</th>
<th></th>
<th>Are Antibiotics Needed?</th>
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<tbody>
<tr>
<td></td>
<td>Bacteria</td>
<td>Bacteria or Virus</td>
<td>Virus</td>
</tr>
<tr>
<td>Strep throat</td>
<td>✓</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>Whooping cough</td>
<td>✓</td>
<td></td>
<td>Yes</td>
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<td>Urinary tract infection</td>
<td>✓</td>
<td></td>
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<tr>
<td>Sinus infection</td>
<td>✓</td>
<td></td>
<td>Maybe</td>
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<tr>
<td>Middle ear infection</td>
<td>✓</td>
<td></td>
<td>Maybe</td>
</tr>
<tr>
<td>Bronchitis/chest cold (in otherwise healthy children and adults)*</td>
<td>✓</td>
<td></td>
<td>No*</td>
</tr>
<tr>
<td>Common cold/runny nose</td>
<td>✓</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Sore throat (except strep)</td>
<td>✓</td>
<td></td>
<td>No</td>
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<tr>
<td>Flu</td>
<td>✓</td>
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* Studies show that in otherwise healthy children and adults, antibiotics for bronchitis won’t help you feel better.
Conclusion

• Patient, medical staff, and clinical/non-clinical staff education is critical

• Identify goals and how to measure them early

• In the acute care and outpatient setting, doing less may result in better patient care
  • Acute Care: Reduce reflex urine cultures for Asymptomatic Bacteriuria
  • Outpatient: Reduce antibiotic prescribing for common problems that are most often viral in nature
Acute Care: References & Additional Resources


Outpatient: References & Additional Resources


Asymptomatic Bacteriuria (ASB)

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References


Urine Culture Assessment Tool

Order to Obtain Urine Culture

Will a urine culture change the plan of care?

No

Recommend discontinuation of urine culture

Yes

UA Performed in previous 24 hours?

Yes

Consider obtaining a UA at this time if none of the below indications are present

No

No

Recommend discontinuation of urine culture (in truly infected patients pyuria should generally be present)

Are any inappropriate indications present?

Yes

One of the following indications present?

1. Based on local findings suggestive of UTI (e.g., pelvic discomfort or flank pain)
2. For bacteriuria screening in asymptomatic patients with the following underlying comorbidities:
   a. Prior to urologic procedures
   b. Pregnant women (avoid urinary catheters if possible)
   c. Neutropenic (ANC < 500 cells/mm³)

No

Fever (≥ 38.5°C or ≥ 101.3°F) AND at least one of the following?

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2. Hypotension (< 90 mmHg systolic)
3. Leukocytosis (>12K cells/mm³; not on steroids)
4. Lactic Acidosis (> 2 mmol/L)
5. Procalcitonin (≥ 0.25 ug/mL)

No

Recommend discontinuation of urine culture

Yes

Approve Culture Order

ON THE WAY TO ZERO
A JOURNEY
BEST THING TO HAPPEN IN LTC

• Antibiotic Stewardship
RESIDENT PROFILE

• Admitted to hospital
• Frequent falls
• Behavior—dementia related
• Medication mismanagement
• History of UTI’s—mental status change

• Enter on antibiotic (UTI)

• Summary noting improvement with hydration and abx.
UTI’S LONG BEEN BLAMED

- Mental status change
- Falls
- Seizures
- Biting?
THE BEGINNING

• The urine dipstick test
• Post treatment testing
SEEMED RIGHT

• Rare culture
• ? Rx
• Post Rx test---No sx, Rx again-reducing sensitivity
HEAD TO THE LAB

• Dipstick false +’s, and false-’s
• Screening-not diagnostic
• Follow with culture
• No value in the post Rx. test
ESCAPE ROUTE

• Dipstick is a lab test.
• We are CLIA waived
• Lab tests need a qc
AHA!

• Costs money
• Limited shelf life ~30 days.
• ? Value
GONE

• Dipstick and Post Rx. test
• Orders: U/A, culture if indicated
APIC TRAINING

• McGeer

• Improved Surveillance of UTI/CAUTI

• Few met criteria, most did not

• NHICEP peers~similar
ICC REPORTING CHANGES

• Met criteria

• Not meet criteria, but rec’d Rx.

• Imagine
• Not well received, initially
• Taken as criticism, not opportunity
• Fear of urosepsis
MORE REPORTING CHANGES

• Report numbers, not rates

• Describe the resident’s Rx’d, but did not meet criteria.
AHRQ CAUTI PILOT PROGRAM

• Excellent opportunity for outsiders to validate the changes toward evidence based practice on both UTI and CAUTI
RESPONSE

• STOP on routine changes for catheters & bags
• Change catheter prior to taking culture
• Catheter cleaning moved to vinegar & water
• Assessment of need for catheter
COMPETENCY TRAINING

• Day long competency training for LNA’s and RN’s
• Catheterization, Cleaning & changing of bags, storage and disinfection
BATH BASIN DEEP DIVE

• Culture of 12 basins
• Led to disposable equipment change out policies
LITERATURE TO UROLOGIST

• Interesting, but getting ready to retire....

• One who was impressed by our 0.0 CAUTI rate, more open-minded
BELLY BAG

• Bold move---crazy or forward thinking
• Reduction from 14 disconnects to one!
POLICY ON UTI MANAGEMENT

• Stop using behavior/mental status change as a sign of UTI
  • Challenging to come to agreement
    • Fear of harm—urosepsis
• Terminology Challenge
  • Watchful waiting
  • Active monitoring—monitor temp, hydrate, paper I&O
  • Introduction of SBAR tool--
UROSEPSIS—OUR EXPERIENCE

• Residents from hospital returned with diagnosis of Urosepsis

• Negative blood cultures—????????
RETURN TO THE LAB

• Discovered coding errors
• Always ask for the blood culture
• Report at your ICC meeting
EDUCATION

• Licensed staff-In Person
• Providers, Medical Director- literature
• Challenge for new hires/travel, new providers
MORE EDUCATION

• LNA’s---MOST EFFECTIVE
AHA MOMENTS FOR LNA’s

<table>
<thead>
<tr>
<th>Urine Color</th>
<th>Possible Meaning</th>
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<tr>
<td>Clear</td>
<td>Good hydration, overhydration or mild dehydration</td>
</tr>
<tr>
<td>Pale Yellow</td>
<td>Good hydration or mild dehydration</td>
</tr>
<tr>
<td>Bright Yellow</td>
<td>Mild or moderate dehydration or taking vitamin supplements</td>
</tr>
<tr>
<td>Orange, Amber</td>
<td>Moderate or severe dehydration</td>
</tr>
<tr>
<td>Tea-Colored</td>
<td>Severe dehydration</td>
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• **Pyuria**
  • Check for presence of vaginal or barrier creams

• **Hematuria**
  • Check for hemorrhoids, vaginal
• Malodor and Sediment
• The senses of smell and vision
EMPOWERMENT FOR LNA’S

• They could change most sx’s with hydration.
• Were less likely to urge families to press providers
IS DYSURIA ALWAYS A UTI?

• Begin with a local assessment
  • More than s/p region
  • Perineal region
• Chart Hx
• ? Atrophic Vaginitis
• Overactive Bladder
CULTURE IS NOT A DIAGNOSIS

• Asymptomatic Bacteriuria
• Colonized
FIRST COMMANDMENT

• Thou Shalt not collect a specimen unless thou knowest what thou will do with the result!
BEFORE YOU CALL SBAR--PIP
REACHING OUT

• Residents - resident council
• Families - letters and pamphlets
• Admission packet intro
“A single symptom is no more the whole disease than a foot the whole man.”

Samuel Hahnemann, 1820
NURSING STRATEGIES & THE PENICILLIN ALLERGY

BY: ASHLEY PINKHAM, APRN, CNL
INFECTIOUS DISEASE NURSE PRACTITIONER
CONCORD HOSPITAL
“BROAD SPECTRUM ANTIBIOTICS ARE NOT A SUBSTITUTE FOR RATIONAL THOUGHT...”
OUTLINE

• Ways to become familiar with ‘allergy vs. side effect’
  • CEU Fast Module

• “Allergy” and the nursing process
  • Assessment & Interview

• Concord Hospital Penicillin Questionnaire

• Tools/Educational Materials for patients and families

• Other stewardship efforts at Concord Hospital
CEUFAST: NURSING CME

Nursing CE
Anytime, Anywhere.

Nationally Accredited
CEUfast, Inc. is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center’s Commission on Accreditation.
Objectives

• After completing this course, the learner will be able to:
  • Describe how drugs and their metabolites become active allergens
  • Differentiate between anaphylactic and anaphylactoid reactions
  • Describe the cross reactivity between Penicillin and Cephalosporin allergies
  • Identify the drugs most frequently involved in true allergic reactions
ACID MNEMONIC FOR REMEMBERING HYPERSENSITIVITY REACTIONS

• **A**: Type I, *Anaphylaxis*, *Allergic*

• **C**: Type II, *Cell Mediated*, *Cytotoxic*

• **I**: Type III, *Immune Complex Deposition*

• **D**: Type IV, *Delayed*
SIDE EFFECT

- Side effects are the secondary and undesired effects of a drug.
- These are expected reactions that occur with the administration of a drug, and every patient receiving that drug is at risk for experiencing side effects.
THE NURSING PROCESS

- The nursing process is a scientific method used by nurses to ensure the quality of patient care.
- This approach can be broken down into five separate steps.
- However, we will focus on the importance of Step 1: Assessment.
THE NURSING INTERVIEW & STEWARDSHIP

• Nursing assessment is the most important step in the nursing process.
• The rest of the process builds off of this one step
• Patient interaction heaviest in this phase
• Whether it’s bedside or triage over the phone, strong interviewing skills are needed to establish a successful working partnership, & to obtain the necessary patient data.
• Obtaining allergy history & clarification is crucial for not only the provider, but the patient (as we heard earlier)

• Benefits:
  • Reduction in unnecessary use of broad spectrum antibiotics
  • Increase drug-bug matching through greater use of beta lactams
  • Better clinical response
• Under the guidance of Dr. White we have started using the Penicillin Allergy Questionnaire to help facilitate a conversation & help to clarify listed Penicillin & Cephalosporin allergies with our patients.

• Data is collected during the rooming process, over the phone, and at the bedside.

• Through this process we have been able to:
  • Educate patients on allergy vs side effect.
  • Reviewing ways to mitigate/decrease side effects i.e.:
    • Trying ginger for nausea
    • Taking prescription with food
  • Educate other practice nurses when a referral is generated for a patient with extended allergy profile.
  • Help gather data prior to office visits, increasing provider efficiency.
  • Send appropriate referrals for allergy testing when indicated.
PENICILLIN ALLERGY QUESTIONNAIRE

(Penicillin, Amoxicillin, Augmentin, Unasyn or Zosyn)

MRN: ___________________________  Allergen: ___________________________

1. How long ago did this reaction occur? (If under 18 classify as childhood) ___________________________

2. Did it require a visit to the ER or admission to the hospital? ___________________________

3. Description any associated symptoms:

   Throat Tightening?   Y   N

   Painting?           Y   N

   Wheezing?           Y   N

   Shortness of Breath? Y   N

   Hives/Rash?         Y   N

   How long after taking the medication did symptoms start? ___________________________
EDUCATION FOR PATIENTS

• American College of Allergy, Asthma & Immunology:
  • The Penicillin Tool Kit
  • For Patients
  • For Providers
EDUCATION FOR PATIENTS CONT…

• Centers for Disease Control and Prevention
  • Graphics for the office
FUTURE ENDEAVORS FOR CONCORD HOSPITAL NURSES AND PENICILLIN ALLERGY TESTING

• Currently working on establishing penicillin and cephalosporin allergy test dose procedures for inpatients and outpatients.
• Nurses would be heavily involved with this procedure.
• Procedure will be based on Blumenthal et al. 2015, 2017 publications.

• RN review order sets.
• Assess patients history.
• Discusses concerns.
• Ensures resuscitation cart readily available.
• RN administers test dose and monitors patient directly.
• RN manages any reaction and proceeds to administer full dose if no reaction.
• Document administration of the test dose and the patient response (reaction, no-reaction).
• Discuss result with provider, remove allergy from med list if they do not react to the test dose.
OTHER STEWARDSHIP PROJECTS

• Antecedent laxative use and C. difficile testing: Empowering nurses to speak up when cultures are ordered
• Colonization vs Active Infection
• Promoting Appropriate Urine Culture Management through AMS: An attempt to decrease overuse of antibiotics in patients with asymptomatic bacteriuria
  • Katie Evans- UNH Direct Entry Masters Student.
ACKNOWLEDGEMENTS

• Dr. Joshua White, Concord Hospital Infectious Disease
• Lynda Caine, RN, Concord Hospital Infection Control & Prevention
• IFD Team (MDs, RNs, MAs, PM, APM, PCCs)
• Katie Evans, UNH-Direct Entry Master’s Student
• Carly Zimmerman MPH, MLS(ASCP)cm, Healthcare-Associated Infections (HAI) Program, Bureau of Infectious Disease Control, New Hampshire Division of Public Health Services, Department of Health and Human Services
Nature alone cures. What nursing has to do is to put the patient in the best condition for nature to act upon him.

- Florence Nightingale
REFERENCES

- CDC. (2019). Do antibiotics have side effects? https://www.cdc.gov/antibiotic-use/community/pdfs/aaw/AU_Do-antibiotics-have-side-Infographic_8_5x5_5_2_508.pdf