AHA/HRET HEN 2.0 CAUTI WEBINAR: ANTIMICROBIAL STEWARDSHIP

September 8, 2016
11:00 a.m. – 12:00 p.m. CT
WELCOME AND INTRODUCTIONS
Marina Levin, Program Manager | HRET | 11:00 – 11:05AM
## AGENDA FOR TODAY

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Description</th>
<th>Presenter</th>
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</table>
| 11:00-11:05 AM | **Welcome and Introductions**                                         | Open and housekeeping information, including review of relevant HRET HEN resources, change packages and Listserv®. | Marina Levin  
Program Manager  
HRET                                             |
| 11:05-11:10 AM | **HEN Data Update**                                                    | Topic-specific data update – not limited to national percent reduction and percent reporting.    | Rich Rodriguez  
Data Analyst  
HRET                                             |
| 11:10-11:35 AM | **Antimicrobial Stewardship for CAUTI in Acute Care**                  | Education on defining asymptomatic bacteriuria (ASB) and CAUTI, understanding the harms of over-treatment of ASB and applying the definitions of CAUTI and ASB to real life cases. | Barbara Trautner MD, PhD  
Associate Professor, Infectious Diseases  
Baylor College of Medicine  
Houston, TX                                         |
| 11:35-11:55 AM | **Hospital Story**                                                     | Hospital story will share its data prior to and after implementing an antimicrobial stewardship program (ASP) as well as what an ASP can do in terms of reducing CAUTI rates. | Suet-Ping Lau, Pharm. D  
Infectious Diseases Clinical Pharmacist  
Orlando Health – Dr. P Phillips Hospital  
Orlando, FL                                          |
| 11:55 AM-12:00 PM | **Bring it Home**                                                      | Action items and tying together of didactic, hospital-level and improvement science information. | Marina Levin  
Program Manager  
HRET                                             |
SIGN UP TODAY: INFECTIONS LISTSERV®

- Infections Analytics Listserv® is available for:
  - Sharing of:
    - HRET resources
    - Publicly available resources
    - Best practices
    - Learnings from Subject Matter Experts
  - Troubleshooting for data reporting and analysis

Sign Up Here
HEN 2.0 DATA UPDATE

Data reported as of 8/9/2016

The ICU measure is only applicable for hospitals with an ICU.

Figure CAUTI-2: CAUTI Rates per 1,000 Urinary Catheter Days

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>CAUTI Rate (per 1,000 catheter days) - All Inpatient locations excluding NICUs</td>
<td>1.00</td>
<td>0.99</td>
<td>1.06</td>
<td>1.01</td>
<td>0.94</td>
<td>1.06</td>
<td>0.93</td>
<td>0.97</td>
<td>0.98</td>
<td>1.00</td>
<td>-2%</td>
</tr>
<tr>
<td>Number (%): 1250 (97%)</td>
<td>1248 (97%)</td>
<td>1248 (97%)</td>
<td>1246 (97%)</td>
<td>1245 (97%)</td>
<td>1231 (96%)</td>
<td>1204 (93%)</td>
<td>1149 (89%)</td>
<td>1078 (84%)</td>
<td>833 (65%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAUTI Rate (per 1,000 catheter days) - ICUs excluding NICUs</td>
<td>1.21</td>
<td>1.13</td>
<td>1.37</td>
<td>1.18</td>
<td>1.10</td>
<td>1.24</td>
<td>1.03</td>
<td>1.15</td>
<td>1.22</td>
<td>1.20</td>
<td>-6%</td>
</tr>
<tr>
<td>Number (%): 794 (94%)</td>
<td>794 (94%)</td>
<td>795 (94%)</td>
<td>795 (94%)</td>
<td>790 (93%)</td>
<td>785 (93%)</td>
<td>773 (91%)</td>
<td>738 (87%)</td>
<td>709 (84%)</td>
<td>533 (65%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results for months in which data submission was less than 50% should be interpreted cautiously, as the data on which the results are based is not yet complete.
HEN 2.0 DATA UPDATE

Figure CAUTI-3: Urinary Catheter Utilization

*The ICU measure is only applicable for hospitals with an ICU.*

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Urinary catheter utilization ratio – All Inpatient locations excluding NICUs</td>
<td>22.38</td>
<td>21.64</td>
<td>21.94</td>
<td>22.23</td>
<td>22.13</td>
<td>21.84</td>
<td>22.05</td>
<td>21.39</td>
<td>21.13</td>
<td>21.18</td>
<td>-3%</td>
</tr>
<tr>
<td>Number (%) of hospitals reporting</td>
<td>1242 (96%)</td>
<td>1236 (96%)</td>
<td>1239 (96%)</td>
<td>1236 (96%)</td>
<td>1222 (95%)</td>
<td>1196 (93%)</td>
<td>1138 (88%)</td>
<td>1069 (83%)</td>
<td>827 (64%)</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Urinary catheter utilization ratio – ICUs excluding NICUs</td>
<td>55.94</td>
<td>58.47</td>
<td>58.73</td>
<td>59.58</td>
<td>59.67</td>
<td>58.80</td>
<td>60.54</td>
<td>59.39</td>
<td>58.76</td>
<td>58.88</td>
<td>7%</td>
</tr>
<tr>
<td>Number (%) of hospitals reporting</td>
<td>750 (89%)</td>
<td>789 (93%)</td>
<td>793 (94%)</td>
<td>792 (94%)</td>
<td>787 (93%)</td>
<td>778 (92%)</td>
<td>769 (91%)</td>
<td>735 (87%)</td>
<td>705 (83%)</td>
<td>551 (65%)</td>
<td>--</td>
</tr>
</tbody>
</table>

Results for months in which data submission was less than 50% should be interpreted cautiously, as the data on which the results are based is not yet complete.

Data reported as of 8/9/2016
ANTIMICROBIAL STEWARDSHIP FOR CAUTI IN ACUTE CARE

Dr. Barbara Trautner, MD, PhD | Baylor College of Medicine | 11:10 – 11:35AM
LEARNING OBJECTIVES

• Define asymptomatic bacteriuria (ASB) and CAUTI
• Understand the harms of overtreatment of ASB
• Apply the definitions of CAUTI and ASB to cases
LEARNING OBJECTIVES

- Define asymptomatic bacteriuria (ASB) and CAUTI
- Understand the harms of over-treatment of ASB
- Apply the definitions of CAUTI and ASB to cases
RELATIONSHIP OF BACTERIURIURIA TO ASB AND CAUTI

Bacteriuria

ASB

CAUTI

Bacteriuria means a positive urine culture
Table 2. Prevalence of asymptomatic bacteriuria in selected populations.

<table>
<thead>
<tr>
<th>Population</th>
<th>Prevalence, %</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthy, premenopausal women</td>
<td>1.0–5.0</td>
<td>[31]</td>
</tr>
<tr>
<td>Pregnant women</td>
<td>1.9–9.5</td>
<td>[31]</td>
</tr>
<tr>
<td>Postmenopausal women aged 50–70 years</td>
<td>2.8–8.6</td>
<td>[31]</td>
</tr>
<tr>
<td>Diabetic patients</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Women</td>
<td>9.0–27</td>
<td>[32]</td>
</tr>
<tr>
<td>Men</td>
<td>0.7–11</td>
<td>[32]</td>
</tr>
</tbody>
</table>
| Elderly persons in the community
d                                        |               |           |
| Women                                                                      | 10.8–16       | [31]      |
| Men                                                                        | 3.6–19        | [31]      |
| Elderly persons in a long-term care facility                              |               |           |
| Women                                                                      | 25–50         | [27]      |
| Men                                                                        | 15–40         | [27]      |
| Patients with spinal cord injuries                                        |               |           |
| Intermittent catheter use                                                  | 23–89         | [33]      |
| Sphincterotomy and condom catheter in place                               | 57            | [34]      |
| Patients undergoing hemodialysis                                           | 28            | [28]      |
| Patients with indwelling catheter use                                     |               |           |
| Short-term                                                                 | 9–23          | [35]      |
| Long-term                                                                  | 100           | [22]      |

<sup>a</sup> Age, ≥70 years.
LEARNING OBJECTIVES

• Define asymptomatic bacteriuria (ASB) and CAUTI
• **Understand** the harms of over-treatment of ASB
• Apply the definitions of CAUTI and ASB to cases
WHAT ARE THE NEGATIVE EFFECTS OF OVERTREATMENT OF ASB

• Overtreatment hurts **individuals**
  – From antibiotics:
    • Gastrointestinal side effects
    • Risk of *Clostridium difficile* infection
    • Collateral damage
      – Induce resistant flora
      – Destroy healthy microbiome
  – Diagnostic delays
• Overtreatment hurts **all of us:**
  – Cost
  – Spread of resistant organisms
  – Falsely elevated CAUTI rates
You want to do the right thing, but what if you miss something?
WHY DOES OVERTREATMENT OF ASB OCCUR?

• Hard to apply guidelines to individual patients
• Historic misunderstanding
  – ASB first described in pregnant women
  – Traditional belief that the bladder is a sterile site
• Entirely a clinical diagnosis
  – Symptoms and signs of CAUTI hard to assess
• Withholding antibiotics is difficult
  – Lab findings are misleading
• Inappropriate risk perception
AND THE ANTIBIOTICS LOOK SO GOOD...
CASE #1: MR. JONES

• Eighty-three year old nursing home resident with dementia and an indwelling Foley
• Nurses observations
  – Less active, not interested in activity participation
  – Eating and drinking less
• Doctor orders urine dipstick
  – 3 + leukocyte esterase (LE)
  – 1+ bacteria
• 14 days of ciprofloxacin prescribed
MR. JONES (PART TWO)

- After three days of ciprofloxacin, he becomes confused and stops eating/drinking
- Sent to emergency room for further evaluation
- Urine with pyuria, foul smell and sediment
- Dehydration noted
- Urine culture sent
- Started on IV ceftriaxone and IV fluids
By day three in the hospital, mental status returns to baseline

Urine culture grows *Klebsiella* resistant to ceftriaxone

Changed to IV ertapenem
MR. JONES (PART FOUR)

- On day three of ertapenem, he develops fever, leukocytosis and diarrhea
- Repeat urine culture grew *Enterococcus* and *Candida*
- Stool sample positive for *C. difficile*
- Nursing facility locates Mr. Jones’ glasses, which had gone missing two days prior to this episode
WHAT HAPPENED TO MR. JONES?

Lost glasses

More Confused

Less Interactive

Drank Less Fluid

Knee-Jerk Antibiotic

Weaker

Nauseated, Drank Less

Emergency Department

Stronger Antibiotics

Life-Threatening Complications
American Geriatrics Society

Ten Things Physicians and Patients Should Question

Released February 21, 2013 (1-5) and February 27, 2014 (6-10)

1. Don’t recommend percutaneous feeding tubes in patients with advanced dementia; instead offer oral assisted feeding.

   Careful hand-feeding for patients with severe dementia is at least as good as tube-feeding for the outcomes of death, aspiration pneumonia, functional status and patient comfort. Food is the preferred nutrient. Tube-feeding is associated with agitation, increased use of physical and chemical restraints and worsening pressure ulcers.

2. Don’t use antipsychotics as first choice to treat behavioral and psychological symptoms of dementia.

   People with dementia often exhibit aggression, resistance to care and other challenging or disruptive behaviors. In such instances, antipsychotic medicines are often prescribed, but they provide limited benefit and can cause serious harm, including stroke and premature...
Evidence base:
Infectious Diseases Society of America Guidelines on CAUTI and ASB
http://www.idsociety.org/IDSA_Practice_Guidelines/

Endorsed by:
US Preventive Services Task Force
# Asymptomatic Bacteriuria in Adults: Screening

**Release Date:** July 2008

## Recommendation Summary

### Summary of Recommendations

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Grade (What's This?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant Women at 12 to 16 Weeks’ Gestation</td>
<td>The USPSTF recommends screening for asymptomatic bacteriuria with urine culture for pregnant women at 12 to 16 weeks’ gestation or at their first prenatal visit, if later.</td>
<td>A</td>
</tr>
<tr>
<td>Men and Nonpregnant Women</td>
<td>The USPSTF recommends against screening for asymptomatic bacteriuria in men and nonpregnant women.</td>
<td>D</td>
</tr>
</tbody>
</table>

[Read Full Recommendation Statement](#)
LEARNING OBJECTIVES

• Define asymptomatic bacteriuria (ASB) and CAUTI
• Understand the harms of overtreatment of ASB
• **Apply the definitions** of CAUTI and ASB to cases
DEFINITIONS OF CAUTI

• Multiple definitions
  – Clinical practice guidelines
    • Infectious Diseases Society of American (IDSA)

• Clinician
  – What the provider actually does

• Surveillance
  – National Healthcare Safety Network (NHSN)
IDSA GUIDELINES: DEFINITIONS OF CAUTI

- ... is defined by the presence of symptoms or signs compatible with UTI with no other identified source along with $10^3$ cfu/mL of one bacterial species in a single catheter urine specimen...

$$\left[ (p \rightarrow q) \land p \right] \rightarrow q$$
Catheter-Associated UTI (CAUTI) vs Asymptomatic Bacteriuria

(Patient with urinary catheter or catheter use within 48 hours)

Start

Does the patient have any of CAUTI symptoms?

- Fever
- Acute Hematuria
- Deiurium
- Rigors
- Flank Pain

Pelvic Discomfort
Urgency
Frequency
Dysuria
Suprapubic Pain

NO

Do not send urine culture

YES

Does a non-UTI diagnosis likely account for the symptoms?

NO

Send urine culture

Consider empirical antibiotics for CAUTI

Review urine culture results

YES

Work-up other cause

Kicking CAUTI
The No Knee-Jerk Antibiotics Campaign

2005 IDSA GUIDELINES FOR ABU
2009 IDSA GUIDELINES FOR CAUTI
Copyright ©
WHAT ARE THE TRUE SIGNS AND SYMPTOMS OF CAUTI

- Fever
- Rigors
- Malaise/lethargy
- Flank pain or CVA tenderness
- Foul-smelling urine
- Acute hematuria
- Pelvic discomfort
- Change in urine color

- Dysuria, urgency, frequency
- Cloudy urine
- Urinary sediment

Why?
These are signs of bacteriuria. Chronically-catheterized patients have bacteriuria 98% of the time.

http://www.idsocociety.org/IDSA_Practice_Guidelines/
WHAT’S MISSING?

- Cloudy urine
- Foul smelling urine
- Urine sediment
- Positive urinalysis
- Pyuria
- Change in urine color
- Falls
- Vague malaise
Mrs. Bevins fell down on Tuesday
Urine dipstick showed positive leukocyte esterase and positive nitrites
Urinalysis showed 50 white cells/ml
Ciprofloxacin started

Mrs. Bevins has a UTI
  – True
  – False
CASE #2 CONTINUED

- Answer: we don’t know
- The dipstick tells us that she has bacteriuria
- Bacteriuria is NOT the same as UTI
  - UTI means symptoms are present
  - No clear evidence linking falls to UTI
LE (leukocyte esterase) = white blood cells
  • Meaning is different for young and older people
  • Positive test has little meaning for older people
  • Negative test is helpful

Nitrite = bacteria in specimen
  • Positive test has little meaning for older people
  • Negative test is helpful
ABSENCE OF PYURIA

- IDSA guidelines: “The absence of pyuria in a symptomatic patient suggests a diagnosis other than CAUTI.”
- Do you use pyuria to rule in or rule out a CAUTI?
  - Answer: rule out

Hooton, Clin Infect Dis 2010; 50:625–663
CASE #2 CONTINUED

- Two days later, her urine culture results return
  - Ciprofloxacin resistant *E. coli*
  - Sensitive to IV antibiotics
  - >100,000 organisms/ml
- No further falls
- Do you admit her for IV antibiotics?
  - No, she is not symptomatic
  - Treat the patient, not the test result
WHAT DO WE DO WITH A PATIENT WHO MIGHT HAVE A CAUTI?

- Suggestions:
  - Change the Foley to ensure no obstruction
  - Look for another cause of symptoms
  - Withhold antibiotics if stable
  - Provide fluids

- We never “do nothing”
- We always provide care
Asymptomatic bacteriuria (ASB) is more common than CAUTI
ASB and CAUTI are distinguished by symptoms, not laboratory tests
You may avoid antibiotic overuse by understanding when patient has ASB rather than CAUTI
ACKNOWLEDGEMENTS

Funding: VA HSR&D, VA QUERI, NIDDK, AHRQ
HOSPITAL STORY
Suet-Ping Lau, Pharm. D | Orlando Health - Dr. P Phillips Hospital | 11:35 – 11:55AM
ORLANDO HEALTH - DR. P. PHILLIPS HOSPITAL

• Located in Southwest Orlando in central Florida (next to theme parks)
• Not for profit, community hospital
• 237 acute care beds medical and surgical facility
• Adult population
• Part of Orlando Health facilities:
  – Orlando Regional Medical Center (ORMC)
  – UF Health Cancer Center (UFCC)
  – Winnie Palmer Hospital (WPH)
  – Arnold Palmer Hospital (APH)
  – South Seminole Hospital (SSH)
  – Health Central Hospital
  – South Lake Hospital
BEFORE ASP

- The highest utilization of broad and costly antibiotics at OH:
  - Meropenem, linezolid, daptomycin, tigecycline... etc.
- The highest antibiotic cost / patient day expenditure (PDE) among sites:
  - $33.6 at DPH vs. $22.9 at ORMC
- The usage of meropenem was above the national average
TOUGHEST PERIOD

- Questionable infectious diseases (ID) pharmacist role (>50% staffing)
- No antibiotic restriction (failed in the past)
- No electronic chart system (paper notes → hard to read 😞)
- No fancy software, reports or help.....
- Low susceptibility antibiogram
- Big drug rep influence
- Challenging physicians:
  - Four private ID physician groups
  - Private hospitalist groups – switching patients everyday
  - Physicians were not taking their responsibilities on antibiotics
  - Intensivists loved using broad spectrum and NEW abx – no streamlining
  - Surgeons loved using tigecycline, meropenem for surgical prophylaxis
- Commonly see patients on prolonged antibiotic course for no reason
ASP IN DR. P. PHILLIPS HOSPITAL

- Established in 2010
- One trained ID pharmacist plus one enthusiastic ID physician
- Support of hospital leadership
- Goals / Mission:
  - Ensuring the proper use of antimicrobials:
    - To optimize patient outcomes
    - To reduce adverse drug events including secondary infection
    - To prevent or slow the emergence of antimicrobial resistance
    - To promote cost-effectiveness regimen
OVERVIEW ASP AT DPH

Daily antimicrobial agents monitoring and surveillance:

• Review all *C. diff* positive cases

• Review all patients in the hospital on antimicrobials:
  – IV to PO switch
  – Bug-drug mismatch
  – Possibility de-escalation per culture results
  – Decrease the duration of antimicrobials
  – Formulary alternatives per culture results, allergies, pharmacotherapy
  – Dose optimization per renal / hepatic function
  – Discontinue surgical prophylaxis antimicrobial agent(s)
  – Allergies investigation (antimicrobial allergy team)
  – Monitor high cost / broad spectrum / high toxicity / national shortage agents:
    • Meropenem, tigecycline, linezolid, daptomycin, colistin, aminoglycosides, ampho-B
NATIONAL ACTION PLAN GOALS

1. Slow the emergence of resistant bacteria and prevent the spread of resistant infections.
2. Strengthen national one-health surveillance efforts to combat resistance.
3. Advance development and use of rapid and innovative diagnostic tests for identification and characterization of resistant bacteria.
4. Accelerate basic and applied research and development for new antibiotics, other therapeutics and vaccines.
5. Improve international collaboration and capacities for antibiotic-resistance prevention, surveillance, control and antibiotic research and development.
IMPORTANCE OF ANTIMICROBIAL STEWARDSHIP

• All antimicrobial use, appropriate or not, carries a risk for developing resistance.
• Antimicrobials should be used **judiciously** and *prescribed only when recommended*.
• Antimicrobial stewardship efforts are critical to limit the development of antibiotic resistance.


- ASP started

Daily Define Dose (DDD) / 1000 pt day

Fiscal Year

- Meropenem (DPH)
- Meropenem (ORMC)
MAJOR ANTIMICROBIAL AGENT UTILIZATION

Antimicrobial Agents Utilization (FY 2008-2015)

- Linezolid
- Daptomycin
- Tigecycline
- Meropenem
- Cipro
- Moxifloxacin
- Pip/tazo
- Cefepime

DDD/1000 pt days

- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
## Antimicrobial Agent Cost Saving at DPH (Before vs. After ASP)

<table>
<thead>
<tr>
<th>Year</th>
<th>Antimicrobial agents yearly expenditure</th>
<th>Cost reduction from year of 2009 without ASP (baseline)</th>
<th>Cost Reduction from the previous year</th>
<th>Cost Reduction from the previous year (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>$1,630,546</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>$1,374,318</td>
<td>$256,228</td>
<td>$256,228</td>
<td>-16.0%</td>
</tr>
<tr>
<td>2011</td>
<td>$863,932</td>
<td>$766,614</td>
<td>$510,386</td>
<td>-37.0%</td>
</tr>
<tr>
<td>2012</td>
<td>$788,461</td>
<td>$842,085</td>
<td>$75,471</td>
<td>-9%</td>
</tr>
<tr>
<td>2013</td>
<td>$550,106</td>
<td>$1,080,440</td>
<td>$238,355</td>
<td>-30%</td>
</tr>
</tbody>
</table>

**Potential Cost Saving in 4 years: $2,945,365**
OVERALL INTERVENTION ACCEPTANCE RATE

Type of Interventions in 2015 (N=1253)

- Therapy recd accepted: 94%
- Formulary Alt Accepted: 87%
- Cut Duration of abx Accepted: 92%
- Dose Optimization Accepted: 97%
- De-Escalation Accepted: 94%
- IV to PO Accepted: 100%

Overall Acceptance Rate: 94 percent
Critical Intervention in FY 2015 (N=211)

- Bug-drug mismatch: 31%
- Positive culture not properly treated (discharged patient): 14%
- Critical labs or cultures notification: 18%
- Potential ADR prevention: 20%
- Reduce LOS: 7%
- ID consult recommended: 6%
- Allergy Testing: 4%
QUALITY:

➔ From Antimicrobial Stewardship Program (ASP)
FIRST CAUTI ROUNDS AT DPH

- Established the first CAUTI prevention rounds at DPH with the infectious diseases physician
  - Weekly rounds with ID physician
  - Educated staff and family member to remove unnecessary Foley catheter
- Developed electronic CAUTI progress note
- Assisted other sites to establish site wide CAUTI rounds
- Transfer the rounding to the unit charge nurse
- Successfully reduced the CAUTI rate at DPH since 2012

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th># of CAUTI</th>
</tr>
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<tbody>
<tr>
<td>2011</td>
<td>25</td>
</tr>
<tr>
<td>2012</td>
<td>15</td>
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<td>2013</td>
<td>11</td>
</tr>
<tr>
<td>2014</td>
<td>3</td>
</tr>
<tr>
<td>2015</td>
<td>2</td>
</tr>
</tbody>
</table>

411 days without CAUTI
C. DIFF PREVENTION

• Developed C. diff infection quality monitoring form
  – Review each HACDI
  – Review all HACDI cases monthly (CQO, ID physicians, infection preventionist)
  – C. diff task force: launched hand-washing campaign
  – Unit practice council
• Reduced unnecessary antimicrobial usage
  – Fluoroquinolones restriction at Orlando Health (FY2013)
• Reduced proton pump inhibitor (PPI) usage

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th># of HACDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>53</td>
</tr>
<tr>
<td>2011</td>
<td>82</td>
</tr>
<tr>
<td>2012</td>
<td>64</td>
</tr>
<tr>
<td>2013</td>
<td>75</td>
</tr>
<tr>
<td>2014</td>
<td>43</td>
</tr>
<tr>
<td>2015</td>
<td>52</td>
</tr>
</tbody>
</table>

EIAS to PCR test

42 percent reduction in a year
ANTIMICROBIAL ALLERGY TEAM (AAT)

- AAT established in DPH since October 2011
  - To evaluate patients who develop new vancomycin reaction(s) upon admission at DPH
  - Additional pre-PEN service to evaluate patient who has history of penicillin allergy
- Goals:
  - Complete patient allergy profile by eliminating invalid antibiotic allergy
  - Improve quality of patient care by broadening the antibiotic choices in the future
  - Improve the proper ways of administering vancomycin
  - Potential cost saving
- Successfully re-challenge Vancomycin/PCN: 92 percent
## Improvements of Bacterial Resistance

### DPH Annual Anti-biogram

<table>
<thead>
<tr>
<th>Pseudomonas aeruginosa</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amikacin</td>
<td>95</td>
<td>95</td>
<td>96</td>
<td>96</td>
<td>98</td>
<td>98</td>
</tr>
<tr>
<td>Cefepime</td>
<td>64</td>
<td>83</td>
<td>85</td>
<td>90</td>
<td>91</td>
<td>89</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>57</td>
<td>71</td>
<td>75</td>
<td>88</td>
<td>80</td>
<td>79</td>
</tr>
<tr>
<td>Pipercillin-Tazobactam</td>
<td>75</td>
<td>89</td>
<td>92</td>
<td>92</td>
<td>96</td>
<td>93</td>
</tr>
<tr>
<td>Meropenem</td>
<td>64</td>
<td>79</td>
<td>86</td>
<td>89</td>
<td>95</td>
<td>93</td>
</tr>
</tbody>
</table>
# IMPROVEMENT OF BACTERIAL RESISTANCE

Rates of multiple drug resistant organisms (MDRO):

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MRSA</td>
<td>55%</td>
<td>55%</td>
<td>50%</td>
<td>50%</td>
<td>51%</td>
<td>46%</td>
</tr>
<tr>
<td>VRE</td>
<td>17%</td>
<td>13%</td>
<td>19%</td>
<td>17%</td>
<td>18%</td>
<td>14%</td>
</tr>
<tr>
<td>ESBL:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• E. Coli</td>
<td>8%</td>
<td>5%</td>
<td>6.6%</td>
<td>4.5%</td>
<td>6.1%</td>
<td>8.6%</td>
</tr>
<tr>
<td>• K. pneumoniae</td>
<td>15%</td>
<td>12%</td>
<td>9%</td>
<td>8.2%</td>
<td>4%</td>
<td>8.2%</td>
</tr>
<tr>
<td>CRE:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• KPC</td>
<td>2.4%</td>
<td>1.8%</td>
<td>1.6%</td>
<td>0.6%</td>
<td>0.7%</td>
<td>1%</td>
</tr>
<tr>
<td>MRSA vancomycin</td>
<td>NA</td>
<td>2.5% (N=6)</td>
<td>4.5% (N=9)</td>
<td>0% (N=0)</td>
<td>1.7% (N=3)*</td>
<td>0% (N=0)</td>
</tr>
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</table>
SHARING ASP EXPERIENCE

• A dedicated person is needed to monitor antibiotics
  – Preferably an infectious diseases trained pharmacist (cost justified)
• It was tough to start but the accomplishments are worth the rewards!
• NEVER EVER give up!
• Remember: we are the physicians’ teammates NOT enemies!
• We can be the “police” but we have to be friendly!
• Be SMART and SWEET!
• Find out what the problems are in your institution then tackle each one!
SUMMARY

• An ASP was successfully created in a community hospital
• Culture of antimicrobial stewardship has changed dramatically since the creation of the program
• Support from physicians and hospital leadership with a dedicated ID trained pharmacist are the keys to the success
• Multi-drug resistance and resistance patterns have improved
• The program has spread to the entire organization
POSTER PRESENTATION AT IHI – DECEMBER 2013
Over 40% reduction of HACDI in a Year

### Background:
The incidence of Clostridium difficile infection (CDI) has had a marked increase in the last decade. Because of this, in 2013, the Department of Health & Human Service (HHS) set a 5-year reduction goal of 30%. Healthcare Associated Clostridium difficile infections (HACDI) are associated with increased hospital stay, cost, morbidity, and mortality. The approximate hospital cost of a CDI case ranges from $4,797 to $11,456. Despite the establishment of an antimicrobial stewardship program since 2010, our HACDI rate at Dr. P. Phillips Hospital (OHP) was still not under control.

### Aim:
Develop strategies for the prevention of HACDI focusing on antimicrobial stewardship, environmental decolonization, and awareness.

### Actions Taken:
- Established an antimicrobial stewardship program since 2010:
  - Over 5 million dollars in potential antimicrobial cost savings in 4 years
  - Reduced unnecessary antimicrobial use
  - Educated prescribers to use antibiotics judiciously
  - Cycled widespread restriction of vancomycin since 10/2012
  - Reduced proton pump inhibitor (PPI) utilization
  - Promoted use of probiotics in high risk patients on broad spectrum antibiotics

- Environmental decolonization:
  - Implemented immediate contact precautions for patients with diarrhea
  - Maintained contact precautions for entire hospital stay on positive CDI case
  - Bleach clean on all patient common areas
  - Double discharge cleaning on positive CDI room
  - Shared equipment in positive CDI patients were cleaned with bleach wipe after each use

- Healthcare workers awareness program:
  - Established Unit Quality Teams to discuss and implement specific initiatives
  - Implemented nurse driven CDI screening protocol
  - Launched hand hygiene campaign
  - Chose monitors for any possible hospital transmission/situation
  - Conducted education to healthcare workers, patients, and family members regarding the importance of personal protective equipment
  - Monthly HACDI care review

The incidence of CDI cases continued to decline, and by 2014, we were able to have a 43% reduction of our HACDI in FY 2014 compared to FY 2013, exceeding the 5-year goal set by the HHS.

We did it: Zero CAUTI for 411 days

### Background:
Catheter associated urinary-tract infection (CAUTI) is the most common healthcare associated infection (HAI) in the United States. Studies have shown 25% of patient develop bacteriuria after having a urinary catheter for 2-10 days and 25% of those patients would develop CAUTI. Over 500,000 CAUTI cases are reported annually which carries significant mortality, morbidity and cost for the healthcare system.

### Outcomes:
- Graph 1: Number of CAUTI cases from fiscal year 2010 - 2014
  - 2010: 0.41
  - 2011: 0.40
  - 2012: 0.27
  - 2013: 0.20
  - 2014: 0.06

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Rate of Foley catheter utilization/100 patient days</th>
<th>Rate of Condom Catheter utilization/100 patient days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2.0</td>
<td>13.5</td>
</tr>
<tr>
<td>2012</td>
<td>3.1</td>
<td>30.9</td>
</tr>
<tr>
<td>2013</td>
<td>3.5</td>
<td>37.5</td>
</tr>
<tr>
<td>2014</td>
<td>3.1</td>
<td>50.4</td>
</tr>
</tbody>
</table>

### Summary:
At Dr. P. Phillips Hospital, we established targeted strategies for the prevention of catheter associated urinary tract infection (CAUTI) in 2011. After the implementation of these strategies, the number of CAUTI cases significantly decreased each year. The decrease lead Dr. P. Phillips Hospital to have ZERO CAUTI for over a year from June 2013 to July 2014.
BRING IT HOME

Marina Levin, Program Manager | HRET | 11:55 – 12:00PM
PHYSICIAN LEADER ACTION ITEMS

What are you going to do by next Tuesday?
- Evaluate your current *C. diff* infection quality monitoring form and make all necessary updates.

What are you going to do in the next month?
- Implement a policy to review each hospital-acquired *C. diff* case with the appropriate individuals.
UNIT-BASED TEAM ACTION ITEMS

What are you going to do by next Tuesday?

- Determine one individual who will be committed to monitoring antibiotics.

What are you going to do in the next month?

- Implement a policy to conduct weekly CAUTI prevention rounds.
HOSPITAL LEADERS ACTION ITEMS

What are you going to do by next Tuesday?
- Educate staff on the difference between ASB and CAUTI.

What are you going to do in the next month?
- Form a *C. diff* task force.
PFE LEADS ACTION ITEMS

What are you going to do by next Tuesday?

- Survey patients and/or families about their knowledge of antibiotic use.

What are you going to do in the next month?

- Invite a patient/family advisor onto your C.diff task force.
UPCOMING EVENTS

• Spread and Sustainability webinar – September 13
• Spread and Sustainability webinar (REPEAT) – September 15
• Results and Best Practice Sharing webinar – September 21

Register Now! http://www.hret-hen.org/events/index.dhtml
THANK YOU!

Find more information on our website: www.hret-hen.org

Questions/Comments: hen@aha.org