ANTIBIOTIC STEWARDSHIP
in a Critical Access Hospital

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Outpatient Antibiotic Stewardship

- Initiated Team to address OUTPATIENT Antibiotic Stewardship in fall 2017
- Inpatient stewardship well established
  - Pharmacy has led this process.
  - Hospitalist evaluate inpatient antibiotic use daily.
- Outpatient team includes:
  - Pharmacy, Infection Prevention, Quality Services Manager, ED Supervisor, ED Provider
  - Also included LTC provider at few meetings (UTI)
- Signed up for Telligen Project and also met QPP (Provider Quality Payment Program) measurement.
Outpatient Antibiotic Stewardship

- Teams initial focus was on Sinusitis (QPP measure) – not enough in population
- Changed focus to UTI / Cystitis care in ED
- FY 2017 – 249 patients with diagnosis code of UTI
  - In addition, 13 coded with cystitis
  - Random chart review
- Chart review
  - 32 discharged patients – baseline data

Outpatient Antibiotic Stewardship

- Education program (presentation) completed at ED Provider Meeting
  - Included current data, along with information on Guidelines for Treatment of UTI and Cystitis – algorithm on Up To Date
  - Other information – UTI in elderly and LTC
  - Bacteria in urine does not always indicate infection
  - Non-specific symptoms with multiple causes
  - Chronic catheters – if in place > 2 weeks at the onset of UTI replace prior to UA
  - Expand data review for 2018 to include information on culture / antibiogram
- Involved the LTC nurse practitioner with information
Outpatient Antibiotic Stewardship

- In July 2018, chart review was completed on January–June 2018 patients (59)
  - Additional information requested (where admitted from, sex)
- Team met again in August to look at 2018 data
- Information on January–June 2018 data given to ED Providers
  - Again gave presentation to Providers at their unit meeting.

Antibiotic Stewardship

- January–June 2018 ED patients with UTI / Cystitis
  - Total 59
  - Varied Antibiotic Use
Culture Results

- 59 patients during January-June 2018 in ED with diagnosis:
  - 38 positive urine cultures with growth > 10,000 (64%)
    - E.Coli = 25 (66%)
    - Proteus Vulgaris = 3 (8%)
    - Enterococcus = 3 (8%)
    - Citrobacter = 2 (5%)
    - Klebsiella Pneum = 2 (5%)
    - Pseudomonas = 1 (<2%)
    - Citrobacter = 1
    - Staph Epi = 1
    - Candida = 1

- 18 patients with < 10,000 organisms
  - 100% of these patients were sent home on 7-10 days of antibiotic
  - In asymptomatic patients, the standard threshold for bacterial growth in a midstream voided urine is ≥10⁵ colony forming units (CFU)/mL, reflective of bladder bacteriuria as opposed to contamination. In symptomatic patients with pyuria, lower midstream urine counts (≥10² CFU/mL) have been associated with the presence of bladder bacteriuria and have been used to diagnose lower UTI. In asymptomatic men and women, lower midstream urine counts have been used to diagnose lower UTI. (Up-to-Date, August 2018)
  - 2 patients had no growth
    - Both patients sent home with antibiotic for 7 and 10 days.
  - 1 patient had no culture done
    - This patient was sent home on 10 days antibiotic.

Follow-up process with positive cultures?

- For positive cultures in the ED
  - The nurse reviews these cultures. If not susceptible to ordered antibiotic, ED nurse will contact provider office nurse regarding this.
  - ED Provider will review if needed.
Antibiotic Usage

2017: 32 patients
■ Cipro: 9 (28%)
■ Levaquin: 6 (19%)
■ Bactrim DS: 5 (16%)
■ Nitrofurantoin: 4 (13%)
■ Cephalexin (Keflex): 2 (6%)
■ Augmentin: 1 (3%)

January-June 2018: 59 patients
■ Cephalexin (Keflex): 14 (24%)
■ Cipro: 11 (19%)
■ Nitrofurantoin: 10 (17%)
■ Bactrim DS: 10 (17%)
■ Levaquin: 5 (8%)
■ Omnicef: 4 (6.5%)
■ Augmentin: 2 (3%)
■ Others: (1%, 1%, 1%)

Antibiotic Usage = Duration

■ Cipro:
  - 1 = 3 days
  - 3 = 7 days
  - 7 = 20 days
■ Levaquin:
  - 1 = 4 days
  - 3 = 7 days
  - 3 = 20 days
■ Nitrofurantoin:
  - 10 = 7 days
■ Bactrim DS:
  - 2 = 5 days
  - 4 = 7 days
  - 7 = 20 days
■ Keflex:
  - 4 = 7 days
  - 10 = 10 days

• 39% had antibiotic orders for 10 days.
• 2% (1/59) had UTI recurrence within 30 days.
Resistance Profile from Lab
January-June

January-June 2017
- E.Coli sensitivities (368 isolates)
  - 97% Nitrofurantoin
  - 78% Trimeth/Stru (Bactrim)
  - 100% Cefazolin
  - 87% Augmentin

January-June 2018
- E.Coli sensitivities (374 isolates)
  - 97% Nitrofurantoin
  - 75% Trimeth/Stru (Bactrim)
  - 100% Cefazolin
  - 100% Cefepime
  - 86% Augmentin
  - Others:
    - 84% Cipro

Antibiotic Stewardship
- ED providers separated
  - Provider A
    - 7 patients
      - Cipro x 7 days
      - Cipro x 10 days
      - Bactrim x 5 days
      - Bactrim x 7 days
      - Keflex x 7 days
      - Daptomycin x 7 days (antibiotic allergies)

Outpatient Antibiotic Stewardship
- Continue to promote stewardship with antibiotic stewardship??
- Chart review for patients in ED from July - December 2018
- Total = 58
- Varies antibiotic use

[Graphs showing gender distribution and arrived from home]
Antibiotic Use for UTI / Cystitis (2018)

**January-June (59)**
- Cephalexin (Keflex): 14 (24%)
- Cipro: 11 (19%)
- Nitrofurantoin: 10 (17%)
- Trimeth/Sulfa (Bactrim DS): 10 (17%)
- Levaquin: 5 (8%)
- Cefdinir: 4 (6.5%)
- Augmentin: 2 (3%)
- Others: 5 (8.5%)

**July-December (58)**
- Cephalexin (Keflex): 17 (29%)
- Trimeth/Sulfa (Bactrim DS): 13 (22%)
- Nitrofurantoin: 11 (19%)
- Cefdinir (Omnicef): 10 (17%)
- Cipro: 3 (5%)
- Levaquin: 3 (5%)
- Augmentin: 1 (1.7%)

Outpatient Antibiotic Stewardship

- 59 patients during January-June 2018
  - 38 positive urine cultures with growth > 10,000 (64%)
    - E.Coli = 22 (58%)
    - Proteus Vulgarm = 3 (8%)
    - Enterococcus = 2 (5.3%)
    - Cholera = 2 (5.3%)
    - Klebsiella Pneu = 2 (5%)
    - Pseudomonas = 1 (<2%)
    - Shiga Epi = 1
    - Candida = 1

- 58 patients during July-December 2018
  - 36 positive urine cultures with growth > 10,000 (62%)
    - E.Coli = 23 (64%)
    - Klebsiella = 5 (14%)
    - Streptococcus Faealis = 2 (6%)
    - Enterococcus Faealis = 1 (5%)
    - E.Ferguson = 1
    - Enterobacter Aerogenes = 1
    - Enterobacter Cloacae = 1
    - Lactobacilus specie = 1

Resistance Profile from Lab (2018)

**January-June 2018**
- E.Coli sensitivities (374 isolates)
  - 97% Nitrofurantoin
  - 75% Trimeth/Sulfa (Bactrim)
  - 100% Cefazolin
  - 100% Cefepime
  - 86% Augmentin
  - Others:
    - 84% Cipro

**October-December 2018**
- E.Coli sensitivities (201 isolates)
  - 97% Nitrofurantoin
  - 80% Trimeth/Sulfa (Bactrim)
  - 100% Cefazolin
  - 100% Cefepime
  - 88% Augmentin
  - Others:
    - 87% Cipro
July - December
Antibiotic Usage = Duration

- Cipro:
  - 3 = 7 days
- Keflex:
  - 8 = 7 days
  - 9 = 10 days
- Levaquin:
  - 2 = 7 days
  - 1 = 10 days
- Amoxicillin/Clavulanate (Augmentin):
  - 3 = 10 days

- 41% had antibiotic orders for 10 days or more.

- Nitrofurantoin:
  - 1 = 3 days
  - 4 = 5 days
  - 6 = 7 days
- Bactrim DS:
  - 1 = 3 days
  - 1 - 5 days
  - 6 = 10 days
  - 7-10 days
  - 11 days
- Cefdinir (Omnicef):
  - 4 = 7 days
  - 6-10 days

Summary

- Evaluate what areas may be of concern to your outpatient department – usage of antibiotics
- Develop plan – diagnoses codes
  - (For UTI used N390, N3000, N3001)
- Share information
- Assess for change/improvement
ANTIBIOTIC STEWARDSHIP

Continue to promote stewardship in type and duration of antibiotics for UTI / Cystitis