ABSTRACT

Background: Urine cultures (UC) are often obtained when symptoms of urinary tract infection (UTI) are absent. Indiscriminate UC can lead to misidentification of catheter-associated UTI (CAUTI). Pyuria (>10 WBC/hpf) has an excellent negative predictive value for UTI in immunologically normal patients.

METHODS: In April 2015 the ability to order an UC was removed at our 650-bed academic medical center. UC was only available via a UTI Evaluation Panel requiring documentation of symptoms and special criteria supporting UC in the absence of pyuria (neutropenia, kidney/pancreas transplant, pregnant, impending urologic surgery, age <3 years, other). A UC was always performed if special criteria were met. Asymptomatic patients not meeting special criteria were not cultured. Symptomatic patients not meeting special criteria had UC reflexively performed based on an algorithm (>100 squamous cells <100 WBC/hpf; no UC <100 squamous cells and >10 WBC/hpf + UC. NHSN CAUTI definitions were used which changed in 2015 (excluded candida and cultures with <100,000 CFU/ml). 2014 CAUTI rates were recalculated using 2015 definitions (A-CAUTI). Institutional catheter utilization (CD/PD) and CAUTI rates using 2014 definitions were compared one year before (4/14-3/15) and after (4/15-3/16). CAUTI rates measured per patient day showed a greater decrease than those measured by catheter day.

RESULTS: Catheter utilization decreased significantly (0.27 CD/PD vs. 0.20 CD/PD, P<0.0001) as did all rates of UC, C-UC, CAUTI and A-CAUTI (Table). C-UC rates measured per patient day showed a greater decrease than those measured by catheter day.

CONCLUSION: Implementation of a urine culture algorithm using symptoms and pyuria resulted in a significant decrease in UC, contaminated UC, and CAUTI.

INTRODUCTION

- Catheter-associated urinary tract infections (CAUTI) are common in hospitalized patients and surveillance definitions utilized by NHSN are non-specific and may result in false positive findings.
- For example a patient with a urinary catheter, fever, and positive urine culture is considered to have a CAUTI even if the fever has another explanation and no local UTI symptoms are present.
- Asymptomatic bacteriuria (ASB) is common in hospitalized patients and urine cultures (UC) are frequently ordered despite lack of UTI specific symptoms.
- This results in potential over diagnosis of both CAUTI and treatment of ASB.
- Urine microscopy is useful for ruling out UTI with a high negative predictive value.
- We implemented a UTI culture algorithm as part of a multi-faceted CAUTI prevention initiative.

RESULTS

- Catheter utilization declined significantly from 0.27 CD/PD to 0.20 CD/PD (P<0.0001).
- After implementation of the UTI panel UC decreased 54% (95%CI 0.38-0.60, P<0.0001) with similar declines when measured by PD, C-UC, and C-UC without symptoms (C-UC without symptoms = C-UC without pyuria).
- Rates of CAUTI and A-CAUTI declined significantly after implementation of the UTI panel with greater declines detected when measured by PD.

CONCLUSION

- Implementation of the UTI Panel was associated with a 54% decrease in urine cultures and a 45% decrease in CAUTI reported to NHSN.
- Implementation of the revised NHSN definition likely accounted for some decrease as demonstrated by a decreased change using A-CAUTI rates.
- When we adjusted for both the new definition (A-CAUTI) and the change in CD (using PD) a 54% decrease in CAUTI was still noted.
- CAUTI per PD may be a better measure of interventions which impact both infections and catheter days.
- The impact of these changes on antibiotic usage and treatment of asymptomatic bacteriuria have yet to be measured.

Bibliography