Impact of Criteria Based Utilization on Reduction of Gram Positive Agent Use at a Large Multi-State Health System

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BACKGROUND

Antimicrobial pressure has been linked to multi-drug resistance, adverse patient care outcomes. It is critical to promote antimicrobial stewardship by utilizing evidence based clinical indications to ensure appropriate use of the antimicrobial agents.

Ascension Health is the largest non-profit health care system in the United States covering 23 states and District of Columbia.

We describe the impact of establishing and implementing criteria based utilization for daptomycin, linezolid, ceftaroline and tigecycline at 80 facilities.

METHODS

An expert group of physicians and pharmacists from different facilities developed evidence based utilization criteria of the four Gram positive agents. It was supported and approved by system clinical committees. The indications were implemented from July 2015 (beginning of fiscal year). The indications were presented at various committees and clinical group meetings. Hospital pharmacy leadership was accountable for engaging physicians for implementation of the initiative. In addition, updates on system and individual facility mean, maximum and minimum defined daily dose (DDD)/1000 patient days of each agent were presented at monthly pharmacy leadership community calls. The trend was reviewed at various multi-disciplinary groups during the fiscal year.

RESULTS

The percentage reduction of the agents ranged from 12% to 40%. Interestingly, Vancomycin use during the period decreased by 17.9%.

CRITERIA

DAPTOMYCIN UTILIZATION CRITERIA

- Treatment of bacteremia or endocarditis or severe systemic infection caused by MRSA with documented severe allergy and intolerance to Vancomycin
- Treatment of MRSA associated bacteremia or serious systemic infections (other than pneumonia) with Vancomycin MICs ≥ 2 mcg/ml and no clinical improvement

LINEZOLID UTILIZATION CRITERIA

- Documented MRSA infection in a patient with severe allergy to Vancomycin
- Documented severe intolerance or resistance to Daptomycin
- Documented vancomycin refractory Pneumonia after 2-3 days of therapy evidenced by worsening infiltrate or pulmonary status
- Documented vancomycin refractory pneumonia as evidenced by MIC ≥ 2mcg/ml and no clinical improvement
- Documented MRSA bacteremia refractory to Vancomycin and Daptomycin as evidenced by failure to clear culture after 7 days of therapy despite optimized vancomycin dosing
- Documented VRE bacteremia or severe SSTI

TIGECYCLINE UTILIZATION CRITERIA

- Salvage therapy for MRSA/VRE infections on a case by case basis
- Multi-drug resistant gram-negative organisms including Acinetobacter spp. and Stenotrophomonas maltophilia on a case by case basis
- Documented intra-abdominal infections in patients with contraindications to both fluoroquinolones and beta-lactams
- Tigecycline: black box warning to be reserved only where no other alternatives are available

CEFTAROLINE UTILIZATION CRITERIA

- Approved indications for community acquired pneumonia and skin and skin structures infections.
- However, its use should be very limited because of other drugs that provide adequate coverage with longstanding safety and efficacy history.
- Because of its activity against MRSA, it is differentiated from other cephalosporins and should be reserved in very select situations related to severe MRSA infections failing the standard therapy or no other alternative due to intolerance.

CONCLUSION

Multi-disciplinary team led system-wide criteria based utilization of daptomycin, linezolid, ceftaroline and tigecycline resulted in a significant reduction of use. Because of the focus on antimicrobial stewardship and prospective monitoring, the initiative also resulted in appropriate use of vancomycin.

The success was based on clear identification for use, ownership at local level, system dashboard and monthly feedback to all hospitals involved.