Antimicrobial Stewardship Strategy:

Targeted review of redundant therapy or therapeutic duplication

Identification and intervention for patients prescribed potentially redundant/duplicative therapy (i.e., antimicrobials with an overlapping spectrum of activity).

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Priority Level: **B**

Difficulty Level: **2**

Program Stage:

- ✓ Early
- Intermediate
- Advanced

Antimicrobial Stewardship Outcomes:

- Drug utilization outcomes

For more information on these criteria and how they were developed, please see the Antimicrobial Stewardship Strategy Criteria Reference Guide.

Description

This is an overview and not intended to be an all-inclusive summary. As a general principle, patients must be monitored by the health care team after changes to therapy resulting from recommendations made by the antimicrobial stewardship team.

A quick review of a patients' antimicrobial therapy may reveal some combinations that could constitute unnecessary therapy—a relatively easy target for stewardship intervention. Most commonly, this includes potentially redundant therapy or therapeutic duplication, whereby antimicrobials with an overlapping spectrum of activity are prescribed.

Review of a patient's medication profile at the time of order entry may be done easily from a pharmacy dispensary. Manual or electronic systems can also be used retrospectively to identify patients who have been prescribed potentially redundant therapy. Pharmacists can review orders to verify appropriateness and recommend ways of streamlining therapy. Reminders could also be incorporated into computerized physician order entry systems to provide information at the time of ordering.

Examples of potentially redundant therapies include:

- Intravenous vancomycin and cefazolin or cloxacillin.
- Intravenous vancomycin and ampicillin.
- Two agents that provide adequate coverage of anaerobes (e.g., beta lactam/beta-lactamase inhibitor combination such as amoxicillin/clavulanate or piperacillin/tazobactam or a carbapenem combined with metronidazole or clindamycin).

- Oral vancomycin and oral metronidazole for *Clostridium difficile* infection.
- A macrolide added to fluoroquinolone therapy (e.g., for community-acquired pneumonia).
- An echinocandin antifungal agent and fluconazole.

Once a culture result is available, there are few situations in which double coverage or combination therapy is justified.

Advantages

- Recurrent prescribing issues may be identified to allow for directed education.
- Cost savings and decreased risk of adverse effects by decreasing antimicrobial use.

Disadvantages

- Requires access to patient-specific data and possibly information on clinical assessment.

Requirements

- Personnel to review patients' therapy and contact physicians when necessary.
- A system for identifying redundant therapy.
- Education of staff who are reviewing prescriptions or incorporating them into computerized physician order entry.

Associated Metrics

- Incidence of redundant therapy.

Useful References

Select articles to provide supplemental information and insight into the strategy described and/or examples of how the strategy was applied; not a comprehensive reference list. URLs are provided when materials are freely available on the Internet.

- Dellit TH, Owens RC, McGowan JE Jr, Gerding DN, Weinstein RA, Burke JP, et al; Infectious Diseases Society of America; Society for Healthcare Epidemiology of America. Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America guidelines for developing an institutional program to enhance antimicrobial stewardship. Clin Infect Dis. 2007;44(2):159–77. Available from: http://cid.oxfordjournals.org/content/44/2/159.long
- Glowacki RC, Schwartz DN, Itokazu GS, Wisniewski MF, Kieszkowski P, Weinstein RA. Antibiotic combinations with redundant antimicrobial spectra: clinical epidemiology and pilot intervention of computer-assisted surveillance. Clin Infect Dis. 2003;37(1):59–64. Available from: http://cid.oxfordjournals.org/content/37/1/59.long

- Huttner B, Jones M, Rubin MA, Madaras-Kelly K, Nielson C, Goetz MB, et al. Double trouble: how big a problem is redundant anaerobic antibiotic coverage in Veterans Affairs medical centres? J Antimicrob Chemother. 2012;67(6):1537–9. Available from: http://jac.oxfordjournals.org/content/67/6/1537.long
- Schultz L, Lowe TJ, Srinivasan A, Neilson D, Pugliese G. Economic impact of redundant antimicrobial therapy in US hospitals. Infect Control Hosp Epidemiol. 2014;35(10):1229–35.
- Tamma PD, Cosgrove SE, Maragakis LL. Combination therapy for treatment of infections with gram-negative bacteria. Clin Microbiol Rev. 2012;25(3):450–70. Available from: http://cmr.asm.org/content/25/3/450.long

  Summary of the evidence of studies comparing combination therapy and monotherapy.

  Data presented shows an increase in adverse events, costs and antimicrobial resistance with no improvement in mortality with combination therapy as compared to monotherapy in the treatment of Gram-negative infections.

Links with Other Strategies

- De-escalation and streamlining

Disclaimer

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For further information

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