Ontario Antimicrobial Stewardship Project

Evidence-Based Summary for Short-Course Antimicrobial Therapy:

Acute Exacerbations of Chronic Obstructive Pulmonary Disease (AECOPD)

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1. *In patients who require antibiotics for mild to moderate AECOPD, the duration of therapy should be limited to a short-course of treatment of 5 days.*

Acute exacerbation of chronic obstructive pulmonary disease (AECOPD) is defined as a sustained worsening of dyspnea, cough or sputum production leading to an increase in the use of maintenance medications and/or supplementation with additional medications.[1] Antibiotic therapy has been shown to be effective and is indicated in AECOPD when at least 2 out of the 3 following signs are present: increased dyspnea, increased sputum volume, increased sputum purulence (Type 1 and 2 exacerbations).[1,2] Recent evidence suggests that short-courses of antibiotic therapy (≤ 5 days) are as effective as conventional longer treatment in patients with acute exacerbations of chronic bronchitis and COPD, without respiratory failure, the majority of whom were treated as outpatients .[3,4]

El Moussaoui and colleagues conducted a meta-analysis of 21 randomized clinical trials with a total of 10,698 subjects, most of whom were outpatients.[3] The mean duration of treatment was 4.9 days in the short treatment groups and 8.3 days in the long treatment groups. The summary Odds Ratio (OR) for early clinical cure was 0.99 (95% CI 0.90-1.08) indicating no difference between short-course versus conventional treatment duration. Similarly, when grouped by antibiotic class the observed OR also indicated no difference in early clinical cure for short-term antibiotic use compared to long-term use: cephalosporins OR 1.04 (95% CI 0.87-1.04), macrolides OR 0.96 (95% CI 0.80-1.16), fluoroquinolones OR 0.94 (95% CI 0.81-1.09). Further, trials with the same antibiotic in both arms showed no difference in outcomes between short-course and conventional duration of therapy (OR 0.93, 95% CI 0.78-1.11). The clinical cure rates as well as bacteriological cure rates at both early and late follow-up were comparable for both treatment strategies.

A second meta-analysis of 7 randomized trials (3083 outpatients) examining short- versus long-duration of antibiotics for AECOPD was conducted comparing regimens of the same antibiotic in both treatment arms.[4] Short-duration of antibiotic therapy lasted 5 days while long-duration treatment lasted 7 or 10 days. No difference in treatment success was observed between patients with AECOPD receiving the same antimicrobial for short versus long periods in both the Intention-to-Treat (RR 0.99, 95% CI 0.95-1.03) or clinically evaluable (RR 0.99 95% CI 0.96-1.02) groups. Patients who received short- compared to long-duration antimicrobial therapy experienced fewer adverse events (RR 0.84, 95% CI 0.72-0.97). There was no difference between the compared groups regarding the eradication of *H. influenzae* (RR 1.00 95% CI 0.91-1.09), *M. catarrhalis* (RR 0.94, 95% CI 0.83-1.06) and *S. pneumoniae* (RR 1.01, 95% CI 0.86-1.19).

On the basis of the pooled results presented in each of these meta-analyses, short-course treatment with antibiotics (5 days) is equally efficacious as longer courses (7-10 days), both in terms of achieving clinical cure and eradication of bacteria from sputum. The results are the same in trials in which short and longer courses of the same antibiotic were included and when antibiotics were grouped by class. Shorter treatment durations confer the added benefit of fewer side effects, better patient compliance and reduced risk of antibiotic resistance development. Short-course antibiotic therapy can be used in those patients with mild to moderate exacerbations, i.e. those patients not in respiratory failure requiring hospitalization.

References

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