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An Antibiotic Prescription Induces Resistance at the Individual Level More Than the Group Level

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To the Editor: An unnecessary antibiotic prescription may be viewed as a time bomb that may detonate in the recipient as a *Clostridium difficile* or antibiotic-resistant infection in subsequent months. Antibiotic utilization selects multidrug-resistant bacteria in both the individual and the facility.^{1,2} Many practitioners view an antibiotic prescription as a benefit to the individual at the expense of the group. However, an unnecessary antibiotic prescription hurts the INDIVIDUAL. The intensity of the damage and disruption of bacterial flora may be greater in the individual who received the antibiotic than at the group level, according to data from a hospital ward and Scottish general practice.^{3,4} This is an important risk-benefit consideration when contemplating antibiotic therapy for an individual. For example, Rotjanapan et al⁵ found that 11 (12%) of 96 residents who received an antibiotic for suspected urinary tract infection (UTI) developed *C difficile* colitis within 3 weeks of treatment. Inpatient quinolone therapy in the preceding 30 days increased the odds that a symptomatic UTI was caused by a quinolone-resistant organism 16 times.⁶ Quinolone therapy during the prior 6 months increased the odds that a febrile UTI was caused by a quinolone-resistant organism 17.5 times in outpatients.⁷ Trimethoprim/sulfamethoxazole prophylaxis for 1 month in postmenopausal women increased resistant *Escherichia coli* in the stool from approximately 20% to 85%.⁸ Of interest, a recent study found that antibiotic treatment of asymptomatic bacteriuria in young women increased the risk of subsequent symptomatic UTI 3 times. Antibiotic treatment in this situation apparently replaced relatively benign colonizers with more virulent bacteria.⁹

In each of these studies, the use of antibiotics put patients at risk for adverse outcomes related to resistant microorganisms.

Antibiotic resistance is clearly associated with increased risk of fatal outcomes.¹⁰ This concern is greater in long term care facilities (LTCFs) than in the community because of the severity of underlying illness and increased frailty of LTC residents (which increase the risk of subsequent infectious illness), as well as “colonization pressure,” and serial contact care with the risk of transmission. In addition, antibiotic resistance increases the costs of care for

both individuals and facilities.^{11,12} The selection of resistant pathogens, subsequent risk of a fatal outcome, and increased health care costs should be considered when determining if empiric therapy for nonspecific indications, such as falls or confusion, is justified, especially in the absence of fever, leukocytosis, or localizing findings pointing to a source of infection.

13 Antibiotic resistance in LTCFs is a huge problem that requires aggressive antibiotic stewardship.^{1,2,5,10,12}

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