

Why do doctors overprescribe antibiotics?

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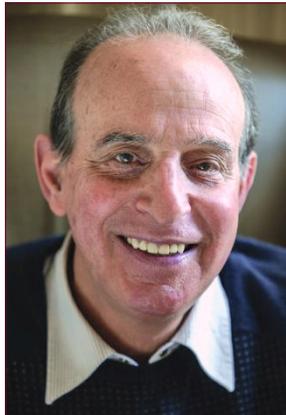
“DO ANTIBIOTICS CURE the common cold or acute viral upper respiratory infections?”

When asked, even pre-clinical medical students typically answer “No” correctly. Yet, data indicate that as many as 50% of primary care physicians commonly prescribe antibiotics in these settings.¹

A 2016 Centers for Disease Control and Prevention (CDC) report estimates that more than 30% of antibiotics dispensed to outpatients are not needed or are inappropriately prescribed.² Similar rates occur in hospital settings.³ Examples of this rampant misuse include^{4,5} prescribing antibiotics for (1) disorders not caused by bacteria; (2) bacterial culture results reflecting colonization or contamination rather than infection; (3) broad-spectrum antibiotics when a narrow spectrum is preferable; (4) therapy duration longer than required; (5) prescriptions at wrong doses; (6) in minor illnesses, prescribing antibiotics before culture results are available or prescribed without diagnostic testing despite evidence that clinical outcomes for cough and sore throat are no different for delayed or immediate antibiotics.⁶ Unneeded antibiotic prescriptions may decline with expanded use of point-of-care testing including rapid strep tests and throat swabs for influenza.

Why do such poor decisions occur?

Frequently, medical errors, including overtreating and overtesting, are due to cognitive or interpretive mistakes rather than lack of knowledge. Some



error-prone cognitive factors include the human attempt to simplify complex decisions and a willingness to judge incomplete, incomprehensible or contradictory information to satisfy pre-formed beliefs or expectations. These flaw-engendering influences are common, affecting prescribing decisions in specific situations where their con-

tributions to decision-making range from major to negligible or absent. Accurate data is lacking to clarify how important these biases are to decisions involving individual patient outcomes or their prevalence in specific situations.

Cognitive influences⁵ include (1) false sense of security from believing antibiotics are “risk free”; (2) defensive medicine and fear of malpractice; (3) lack of physicians’ confidence in diagnostic skills; (4) appeal of writing a prescription compared to the time and effort required to explain why it is not needed; (5) direct-to-consumer media which may mislead, create a misplaced need for antibiotics and emphasize fear of “infections”; (6) physician assumptions about patient expectations; (7) physicians tend to undervalue long-term risks such as antibiotic resistance and overvalue the short-term risk of inaction; (8) patients and physicians more easily recall (availability bias) someone “cured” with antibiotics than a case of antibiotic resistance; (9) patient-centered care movement; patients more likely to request or demand medications.

Which situations in a physician’s day increase overprescribing?

Specific situations increase the likelihood of poor decisions, such as overprescribing, which tends to increase with fatigue, hunger, interruptions, inattention, sleep deprivation and a rushed, time-pressured environment. Commonplace actions such as thinking about an upcoming vacation can impair decision quality.⁷ Physicians are more likely to opt for unnecessary antibiotic therapy at the end of a long shift due to decision fatigue from cognitive overload after too many tough mental choices increase impulsive, oversimplified or poorly reasoned choices. In a survey of 21,867 records of patients with presumed viral upper respiratory infection, physicians were 26% more likely to prescribe unneeded antibiotics in the 4th hour of a shift compared to the 1st hour.⁸

Which doctors are more likely to overprescribe?

Individual personality traits influence the probability of overuse of unneeded health services, including physicians who are risk averse, lack confidence in their diagnostic skills, tolerate uncertainty poorly, are indecisive or fear malpractice.⁹ Overprescribing doctors tend to be less well trained, less motivated and less professional or burned out. Specific medical practice patterns potentiate overuse, including herding, defined as alignment of thoughts or behaviors on decision-making in a group; inbreeding of a medical group or hospital when members have all trained in the same environment of too liberal antibiotic use; unwillingness to upset the status quo when other physicians have previously prescribed antibiotics inappropriately.⁵

What are patient-based facilitators of overprescribing?

Hoffman, et al assessed 35 studies exploring patient expectations of benefits and harms of diverse interventions, including screening, testing or treatment. Patients overestimated benefits and underestimated harms for two-thirds of widely varied interventions, including antibiotic decisions.⁶ Like physicians, patients facing common medical decisions are also frequently inaccurate in assessing how well informed they are, systematically perceiving they are more knowledgeable than they actually are. Some patients request or demand unnecessary care.

Health-systemic barriers to reduce overprescribing

Aspects of the USA healthcare system facilitate overprescribing, including a payment system overvaluing interventions compared to talking to patients; lack of economic disincentive to over-treat; cultural beliefs that more is better;

direct-to-consumer media which may mislead, creating a perception of a need for antibiotics. Also, physician adherence to evidence-based practice guidelines varies widely. Doctors' complaints about guidelines include inertia, habit, lack of awareness, time, agreement, familiarity or belief in the efficacy of "cookbook" medicine with multiple, often contradictory guidelines.¹⁰ Thus, accurate knowledge of antibiotic recommendations is not always a strong predictor of prescribing behavior.

Misuse of antibiotics is the major culprit leading to the development of antibiotic-resistant organisms, which cause an estimated 2 million illnesses and 23,000 deaths annually in the United States.¹¹ The CDC and the Infectious Diseases Society of America^{11,12} recommend that all hospitals create antibiotic stewardship programs which include quality measures, responsible leaders committed to improved antibiotic use, monitoring prescribing and resistance data, physician and staff education,

guidelines for diagnosis and treatment of infections which include dose optimization and duration of use, when antibiotics are not needed, hospital formulary preauthorizations for selected antibiotics, antibiotic order forms and prospective review of clinical data. The Rhode Island Department of Health (www.health.ri.gov) has extensive, useful information on antibiotic-related issues for the general public and health practitioners.

Prolonged, effective, multi-modality efforts to optimize antimicrobial stewardship with nationwide infection control programs can reduce the epidemic of antimicrobial-resistant bacteria. Current program guidelines reflect state-by-state and local hospital system decisions. Potential benefits of widespread, robust antibiotic stewardship improvements would be reduction of health care costs and better resource utilization presumably leading to positive effects on quality of care and patient outcomes. ❖

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