

for example, be clinically relevant quantitative differences in nerves, and the recent advances in imaging technology in this field are likely to provide answers to such questions in the near future (15). However, what might be even more important than any quantitative difference in the nerves is alteration in their function. It is conceivable that tissue inflammation arising from pathogens or environmental irritants or specific respiratory diseases may induce neural injury, leading to alterations of peripheral, and ultimately central, sensory pathways (1).

So, now that these nerves can be seen in such exquisite detail within the human airway, do we believe in their importance? I suggest the answer is “yes,” but to acquire a more detailed understanding, we will need to do more than just “see” them. That said, the elegant work by West and colleagues is an important step in the right direction and will encourage many currently seeking to develop this important clinical area. ■

Author disclosures are available with the text of this article at www.atsjournals.org.

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Television Advertising of Medicines Unexpected Consequences?

Several approaches to healthcare are possible. The traditional paternalistic approach, “doctor knows best,” has been challenged by a consumerist approach in which what the patient wants is delivered. This may not be evidence based or best in terms of patient outcomes, and it is rarely affordable by healthcare insurers or governments. The evolving and welcome compromise is a combination of the two, or a form of partnership medicine in which the sharing of information and expectations informs a subsequent decision-making process involving both the patient and health professional. In respiratory medicine, there are now good examples of how this approach enhances compliance, reduces the need for unscheduled healthcare, and improves quality of life (1). But how the information is provided and shared is important, and in this evolving arena, the role of nondoctor sources of information needs to be assessed.

Patients talk to friends and family for advice and information, they read magazines and newspapers containing health-related information, they use social media, and the majority also access health-related websites in the search for information about their

condition or its treatment. Some websites are more factually correct than others, and many contain either advertisements for products or promotional editorial material. Tapping “treatments for asthma” into a search engine produces information about everything from autologous stem cell therapy to “energized air,” but despite the fact that so many patients search the Web, only a very small number of patients report that their doctor has recommended websites to them. Far more European patients with asthma and chronic obstructive pulmonary disease reported receiving written information than being advised by their doctor which Internet sources of information are the best (2). During consultations, we should routinely ask patients “What sources of information have you accessed?” or “What have you already learned about this condition or its treatment?” We then need to acknowledge that “this is a lot of information for you to take in. Can I recommend some websites for further reading?” Given that patients already report potential problems related to online health information seeking (3), such statements should not seem out of place.

If the Internet contains information of variable quality, perhaps carefully regulated direct-to-consumer advertising, for example on television, may be a better approach? Just two countries (the United States and New Zealand) permit direct-to-consumer television advertising, and in this issue of the *Journal*, Daubresse and colleagues (pp. 40–46) have reported how such advertising might impact prescription rates for four controller asthma medications and healthcare use for patients with asthma in the United States (4). Using a complex methodology, the authors first defined direct-to-consumer advertising exposure based on household television viewing and then related this to both pharmacy sales of medications and outpatient visits, emergency room visits, and hospitalizations (with asthma). The advertising seemed to work in that pharmacy sales of the advertised products increased, but unlike other forms of advertising, the increase here reflects not direct consumer demand but demand via a physician. The increase in sales is unlikely to reflect brand switching, because the introduction of a new inhaled steroid/long-acting β -agonist inhaler during the course of this study did not appear to reduce sales of a preexisting similarly advertised product. However, there was a strong correlation between exposure to advertising and new prescriptions for the new product. Less easy to explain was the association observed between viewing the television advertisements and the greater number of emergency room visits (for asthma).

Like all research involving interrogation of databases, the results are useful in hypothesis generation rather than for providing definitive answers. For example, it may be that advertisements lead to a search for convenient sources of more medication, or perhaps the advertisement reminds patients or carers of signs that suggest poor control of their condition, and this initiates healthcare attendances. If so, the fact that emergency room attendances but not hospitalizations increased with increased exposure to advertising suggests that the attendances were not necessarily for severe disease. Other unanswered questions also arise from the present study. Do we know that the expensive advertising is leading to an increase in *necessary* medication, or is it resulting in overtreatment? Patients' requests for medication have been shown to be a powerful driver of prescribing decisions, but the appropriateness of such prescriptions may suffer (5). Similarly, how certain are we that the content of advertisements is balanced, informative, and helpful? Marketing legislation requires advertisements to contain information regarding side effects. Although the same information is contained within patient information leaflets (which have been shown to lead to better informed and more satisfied patients [6]), there might be a difference between choosing to read a package insert and the same information displayed on television screens. Not taking medication in the manner previously discussed with a doctor is a major problem in the

management of most long-term conditions (7), and real or imagined side effects or fear of side effects can play a significant part in this nonadherence.

More work is needed before we know whether direct-to-consumer advertising of medications is a welcome source of information central to shared decision making and partnership medicine or whether it unnecessarily increases medication usage and cost, encourages emergency room attendance that could potentially have been avoided by different anticipatory prior care, and raises fears regarding side effects. Definite benefits in terms of health outcomes currently seem to be missing. ■

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Stress, *ADCYAP1R1*, and Childhood Asthma No Sigh of Relief

Children with asthma in the United States continue to experience suffering and diminished quality of life (1). Despite decades of

research, the precise genetic and environmental factors giving rise to asthma and its phenotypic characteristics have remained elusive. Children from Puerto Rico in particular have a greater asthma prevalence (8–49%) (2) and disease burden compared with children from other ethnic groups (2, 3). The exposure to early-life

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