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Definitions of Chronic Health Conditions in Childhood

To the Editor: In their Review, Dr van der Lee and colleagues¹ found wide variability in the reported prevalence of chronic health conditions in childhood, largely a result of different definitions. Only 1 of the 64 articles included in the Review reported the percentage of children with more than 1 condition.² Multimorbidity, the co-occurrence of multiple chronic conditions in 1 individual, is increasingly recognized as having a major effect on patient outcomes and health care costs, posing a significant challenge to current models of health care.³

Certain features of multimorbidity in children make it a very promising field for investigation. First, although the proportion of children and adolescents with more than 1 disease is lower than in adults and older patients, the number of those with 3 or more different diseases is also greater than would be expected due to chance alone, more so than for any other age group.⁴ Second, the mix of comorbid conditions in children and adolescents is very different from that of adults, more commonly including asthma and different types of allergic conditions.² The natural history of these conditions includes recurrence or complete resolution; they therefore require a different management approach than diseases typically clustering in the elderly population. Third, multimorbidity in children and adolescents has the potential to pre-

dict subsequent multimorbidity in older ages, but this has not yet been investigated.

To better understand the life course of illness and to determine the utility of different concepts of "chronic," more study of the natural history epidemiology of common diseases and their co-occurrence is needed. The article by van der Lee et al did not include definitions used by systems that characterize morbidity based on types of illnesses (eg, chronic, acute self-limited, acute but likely to recur). Such systems may become useful in characterizing morbidity burdens in both adults and children.⁵

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In Reply: In response to the comments of Dr Valderas and colleagues, the measurement of multimorbidity indeed poses a methodological challenge. Because the goal of our Review was to find definitions of chronic conditions in childhood, we restricted our search to the literature concerning "children" (aged 0-18 years). Thus, we did not include potentially important articles on this subject from the adult literature. Their comments, coming from a primary care research and development center, emphasize that there is a need for consensus on the definition of chronic health conditions in children and that the associated measurement methods should involve all relevant disciplines including general practice, internal medicine, rehabilitation medicine, and public health.

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Genetic Associations With Age-Related Macular Degeneration

To the Editor: In their study of the Age-Related Eye Disease Study (AREDS) participants,¹ Dr Seddon and colleagues investigated whether genetic variants were associated with progression of age-related macular degeneration. In the article, they did not present the main results stratified by treatment assignment. Results for the antioxidants-plus-zinc group and the placebo group would have been a useful addition to Table 6 in the article. The authors did note that genotype and treatment had no significant interaction, but interaction tests may have very low statistical power.

Providing these specific results would also help interpret the corrected abstract conclusion: "Presence of these polymorphisms plus smoking and body mass index of 25 or higher, controlling for AREDS vitamin-mineral treatment, identifies patients who are highly susceptible to developing advanced stages of this visually disabling disease."¹ The treatment used in AREDS appears to be one of the few options to help manage this public health problem,² but high doses of vitamin E (an essential component of AREDS treatment) can be harmful,³ making this additional information important.

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In Reply: In response to Dr Damián, we had considered including details of the treatment analysis. However, it would

have been necessary to analyze both the interactions with treatment components considered separately (antioxidants vs placebo, zinc vs placebo) as well as in combination (antioxidants with zinc vs placebo). Furthermore, it is important to consider both quantitative interactions (when the direction of the effect is the same in 2 treatment groups, but the magnitude is different) and qualitative interactions (when the direction of the effect is different in different treatment groups). However, these analyses are complex, and we believed that to do justice to the treatment data and not make this article too cumbersome to interpret, the genotype-treatment data would be best presented in a separate publication.

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Clinical Revenue Investment in Biomedical Research

To the Editor: In their Commentary, Drs Bowman, Rubinstein and Levine¹ discussed clinical revenue investment in biomedical research at the University of Pennsylvania and the University of Pittsburgh. The authors characterized the University of Pittsburgh Medical Center as "the only academic health system in western Pennsylvania"; this is not accurate.

The West Penn Allegheny Health System serves as campuses for the training of undergraduate medical students from the Temple University School of Medicine and the Drexel University College of Medicine. It has a large number of accredited residencies and fellowships, well-published faculty, and significant external funding.

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1. Bowman MA, Rubenstein AH, Levine AS. Clinical revenue investment in biomedical research: lessons from two academic medical centers. *JAMA*. 2007;297(22):2521-2524.

In Reply: I agree with Dr Post that the West Penn Allegheny Health System has academic interests and characteristics, for which I have great respect. However, a com-