

We declare no competing interests.

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- 1 Kaplan H, Thompson RC, Trumble BC, et al. Coronary atherosclerosis in indigenous South American Tsimane: a cross-sectional cohort study. *Lancet* 2017; **389**: 1730–39.
- 2 Masterson EE, Fitzpatrick AL, Enquobahrie D, Hujuel P, Mancl L, Nurius P. Putting teeth into the developmental origins hypothesis: a longitudinal study of early childhood malnutrition, enamel hypoplasia and adolescent health in Amazonian Bolivia. Seattle, WA: University of Washington, 2016.
- 3 Rosinger A, Tanner S, Leonard WR, for the TAPS Bolivia Research Team. Precursors to overnutrition: the effects of household market food expenditures on measures of body composition among Tsimane' adults in lowland Bolivia. *Soc Sci Med* 2013; **92**: 53–60.
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### Authors' reply

We thank Robert H Howland, and Erin E Masterson and colleagues for their interest in our Article<sup>1</sup> that reported low levels of coronary artery calcium among Tsimane horticulturalists of the Bolivian Amazon. In the Article,<sup>1</sup> we hypothesised that, despite a high inflammatory burden, low coronary artery calcium in the Tsimane population could be due to a combination of low lifetime blood lipids, largely traditional diets, and high physical activity.

The protective role of helminths in atherosclerosis mentioned by Howland is an additional explanation that our group is currently investigating.<sup>2</sup> Helminths might have a role in modulating cardiovascular burden via caloric costs of immune activation, altered lipid and glucose metabolism, T-helper-2 cell-biased immunomodulation, and direct costs of lipophilic helminths. Among Tsimane adults, immune indicators of

helminth infection are associated with lower body-mass index, systolic blood pressure, total cholesterol, low-density lipoprotein, high-density lipoprotein, blood glucose, and triglycerides.<sup>2</sup>

Masterson and colleagues' observation that adolescent Tsimane diets include processed foods reinforces our reports that Tsimane lifestyle is rapidly changing. As noted in our Article,<sup>1</sup> total cholesterol and LDL have increased in recent years. Our unpublished analysis of 1404 dietary recall records indicated that, between 2011 and 2016, sugar consumption increased by six-times from 3.4 g (13.6 kcals) to 23.6 g (94.2 kcals) per adult per day. American adults consume an average of 59.8–83.8 g (239–335 kcals) processed sugar per day.<sup>3</sup> Over the same time period, overall market food in the diet increased from 6.1% in 2011 to 10.6% by 2016. Since these changes have occurred in the past decade, older adults in our study have lived most of their lives with low exposure to circulating lipids. We hypothesise that this low exposure resulted in delayed coronary artery calcium formation.

The inclusion of processed foods in the Tsimane diet is still highly variable among Tsimane villages, and their net effect on health is unclear. Rosinger and colleagues' research<sup>4</sup> cited by Masterson and colleagues focused on a younger sample of Tsimane individuals (median age in years, mid-30s) from more easily accessible Tsimane communities. Furthermore, Rosinger and colleagues<sup>4</sup> did not investigate many of the remote communities (which have little access to market goods) included in our study, and they found only a 1% difference in body fat between men consuming the highest to lowest quartile of market foods. Furthermore, adult dental decay is probably caused more by poor oral hygiene and a diet high in carbohydrates (eg, rice, fermented manioc, honey), as opposed to market goods. Unpublished dental exams (n=1564) indicate that the average Tsimane adult has lost 15.2 teeth

by age 57.6 years (the mean age in our study). Thus, despite high levels of inflammation and poor dental hygiene, Tsimane individuals have little coronary artery calcium, indicating a need to re-examine these two commonly identified correlates of atherosclerosis.

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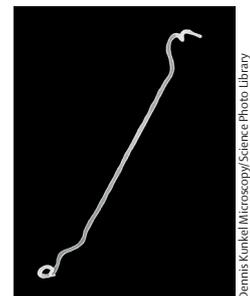
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- 1 Kaplan H, Thompson R, Trumble BC, et al. Coronary atherosclerosis in indigenous South American Tsimane: a cross-sectional cohort study. *Lancet* 2017; **389**: 1730–39.
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### Syphilis in children

The Seminar on syphilis by Edward W Hook 3rd (April 15, p 1550)<sup>1</sup> is interesting; however, it does not adequately address the disease characteristics and management in children and therefore should rather have been entitled "syphilis in adults".

Although congenital syphilis is briefly mentioned in the Seminar (and accompanying editorial),<sup>1</sup> details are absent about its characteristics and management, and the aspects of *Treponema pallidum* transmission



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See [Editorial](#) *Lancet* 2017; **389**: 1492 and **390**: 1624