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Letter to the Editor: "Modelling the risk of foodborne transmission of Toxocara spp. to humans" by Healy et al. (2025)

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Dear editor

We read with great interest the recent article by Healy et al. [1], which presents a compelling and rigorous model of the risk of *Toxocara* spp. transmission via food. By integrating qPCR and ELISA data into a Bayesian framework, the authors have significantly advanced our ability to quantify foodborne helminth risk – an area that has traditionally received far less attention than viral or bacterial foodborne hazards.

Strengths and contributions of the original study

The authors' stratification of risks between spinach and undercooked meats offers a nuanced foundation for targeted public health messaging. This approach is particularly valuable given the established clinical burden of toxocariasis, which has been estimated to affect over 1.4 billion people globally [2]. Furthermore, by building on molecular and serological datasets and linking them with exposure estimates through dose–response modelling, the study sets a high standard for future food safety assessments involving zoonotic helminths.

Opportunities for contextual expansion

Several avenues for expanding the utility of this model deserve further consideration:

1. *Cultural dietary patterns:* The model's impact would be magnified in regions where raw or lightly cooked food is more commonly consumed. For instance, Deng et al. reported substantially higher *Toxoplasma gondii* risk in pork consumers in China [3], highlighting the influence of preparation style on risk. In Southeast Asia, traditional dishes using raw pig liver or fermented meats could yield significantly higher risk estimates if incorporated into the Healy et al. framework.
2. *Model parameter localization:* While the authors have done well with UK-specific consumption and contamination data, adapting the model using local priors from high-risk settings could markedly change the risk output. Studies from Iran and Turkey documented contamination rates of unwashed vegetables with *Toxocara* eggs exceeding those used in this study [4,5,6], indicating the need for localised calibration.
3. *Diagnostic granularity:* The assumption that seropositivity equates to viable larvae is understandable but could be refined with emerging techniques. The use of species-specific antigens—as proposed by Strube et al. [7,8]—may allow future iterations of this model to distinguish risks associated with *T. canis* vs. *T. cati*, a distinction relevant to different food animal exposures.

Implications if adopted widely

If the suggestions above were integrated, the resulting model would be a powerful cross-contextual tool for:

- *Food safety policy:* Offering region-specific guidance for food washing, meat preparation, and consumer education.
- *One Health surveillance:* Supporting integrated parasite monitoring across livestock, produce, and environmental samples.
- *Risk communication:* Helping health authorities better communicate risks to vulnerable populations – particularly those consuming raw greens or undercooked meats.

Conclusion

Healy et al. have broken new ground in quantifying the hidden risk of foodborne *Toxocara* transmission. While the average risks may appear modest, the potential clinical severity and

cultural variability in exposure warrant continued model expansion and validation. We commend the authors and hope this valuable work sparks further international research and policy engagement.

Competing interests. The author declares no conflict of interest.

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