



Author response to: Comment on: Multivariable prediction model for both 90-day mortality and long-term survival for individual patients with perihilar cholangiocarcinoma: does the predicted survival justify the surgical risk?

Stefan Buettner¹ , Anne-Marleen van Keulen¹, Bas Groot Koerkamp¹  and Pim B. Olthof^{1,2,*}

¹Department of Surgery, Erasmus MC Cancer Institute, Rotterdam, The Netherlands

²Department of Surgery, Amsterdam University Medical Centres, University of Amsterdam, Amsterdam, The Netherlands

*Correspondence to: Pim B. Olthof, Department of Surgery, Erasmus MC Cancer Institute, Doctor Molewaterplein 40, 3015 GD, Rotterdam, The Netherlands (e-mail: p.olthof@erasmusmc.nl)

Dear Editor

We would like to thank Liu *et al.*¹ for their comment on our article².

First, we agree that the use of BMI as a continuous variable may underestimate the negative effect of low BMI on outcomes. Yet, continuous BMI was the better fit in the Cox and logistic regression models, compared with BMI categories, albeit slightly (Cox regression: Akaike's information criterion (AIC) continuous = 11 169.31 versus AIC categories = 11 172.84; logistic regression: AIC continuous = 1048.41 versus AIC categories = 1049.649).

Second, Liu *et al.*¹ propose excluding the patients who died within 90 days after surgery from the model for long-term overall survival (OS). We would agree with excluding patients with postoperative mortality if the aim of the study had been to develop a model to inform patients and physicians 'after' surgery. Such models, however, have been published already³. Our aim in van Keulen *et al.*² was to predict long-term OS for shared decision-making 'before' surgery. Excluding patients with 90-day mortality from this model would have resulted in overestimating long-term OS.

Third, Liu *et al.*¹ recommend using bilirubin rather than jaundice at presentation. We agree that bilirubin at presentation may have been a better prognostic factor. We used jaundice at presentation, because bilirubin in our multicentre data set was not consistently reported at presentation; frequently, it was available only after biliary drainage or immediately before

surgery. This inconsistency will be resolved in future updates of the multicentre data set.

Finally, we thank Liu *et al.*¹ for noticing a discrepancy between the main text and Figure 1 legend regarding the weblink for the online calculator. We apologize for any confusion this has caused. The appropriate weblink is: https://dhoppener.shinyapps.io/risk_vs_harm_app/.

References

1. Liu Z-P, Gong Y, Dai H-S, Yin X-Y, Chen Z-Y. Comment on: Multivariable prediction model for both 90-day mortality and long-term survival for individual patients with perihilar cholangiocarcinoma: does the predicted survival justify the surgical risk? *Br J Surg* 2023. <https://doi.org/10.1093/bjs/znad128> [Epub ahead of print]
2. van Keulen A-M, Buettner S, Erdmann JI, Pratschke J, Ratti F, Jarnagin WR *et al.* Multivariable prediction model for both 90-day mortality and long-term survival for individual patients with perihilar cholangiocarcinoma: does the predicted survival justify the surgical risk? *Br J Surg* 2023;**110**:599–605
3. Groot Koerkamp B, Wiggers JK, Gonen M, Doussot A, Allen PJ, Besselink MGH *et al.* Survival after resection of perihilar cholangiocarcinoma—development and external validation of a prognostic nomogram. *Ann Oncol* 2015;**26**:1930–1935

Received: April 13, 2023. Accepted: April 28, 2023

© The Author(s) 2023. Published by Oxford University Press on behalf of BJS Society Ltd.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact journals.permissions@oup.com