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BAUSSS biomarker further validated as a key risk staging tool for patients with primary melanoma

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LETTER TO THE EDITOR

BAUSSS biomarker further validated as a key risk staging tool for patients with primary melanoma

Dear Editor,

We welcome Lo and colleagues' (Lo) recent contribution on the role of the biomarker BAUSSS in the assessment of primary cutaneous melanoma prognosis.[1] BAUSSS is an algorithm of Breslow thickness, age, ulceration, subtype, sex and site.

We had reported that the 'Lifemath'[2] tool was the only reliable online nomogram available to help clinicians counsel patients regarding their melanoma prognosis.[3] Lifemath includes all elements of BAUSSS and outperforms the other nomograms, 'AJCC'[4] and 'Louisville'.[5] 'AJCC' nomogram regards a Breslow thickness over 1 mm as preferable to a thickness under 1 mm which alone precludes its clinical usage. Over 50% of patients with melanoma do not qualify for assessment by the 'Louisville' algorithm[5] given its inclusion design shortcomings. Further, 'Louisville' does not factor tumour subtype.

Lo raised concerns with our methodology and conclusions in testing nomograms by inserting into each identical clinical scenarios, calculating hazard ratios (HRs) for BAUSSS components and comparing these to HR results from published studies.[6,7]

Lo suggests that we concluded BAU (Breslow thickness, age and ulceration) is likely sufficient to counsel individual patients. Our background introduction explained why nomograms must at least include BAU in methodology. Our conclusion favoured using all of the BAUSSS biomarker.

Lo comments that we evaluated overall survival (OS) nomograms. As our methodology explains, we searched for all available survival nomograms. The nomograms varied. 'Lifemath' provides melanoma-specific survival outcomes. 'Louisville' provides OS data. 'AJCC' provides unspecified survival rates.

Lo comments that we did not directly compare models on the same data set. The three nomograms evaluated were based on different databases and methodologies, rendering Lo's concern invalid. This is why we used typical clinical scenarios to examine how each model interprets the different predictors and what outcomes they represent.

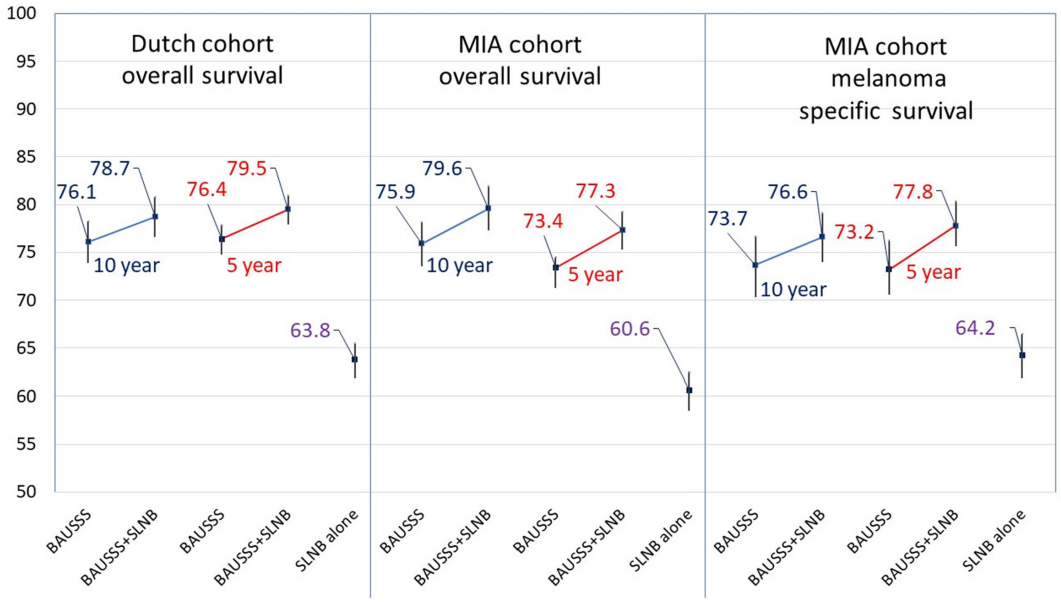

FIGURE 1 Long-term data from Dutch and Melanoma Institute Australia cohorts identifying C-statistic for survival prediction along with 95% confidence limits. Survival figures for 5 and 10 years are depicted. These additional data from Lo[1] further validate the value of BAUSSS in assessing a long-term prognosis for primary cutaneous melanoma patients. Sentinel lymph node biopsy status adds further 2.6%–4.6% to C-value, with confidence limits frequently overlapping. Using SLNB alone to predict outcome is substantially inferior to BAUSSS.

Lo questions why we report mortality HRs for Breslow thickness based on data from El Sharouni[6] and MSLT-1.[7] Almost all substantive melanoma data sets determine the multivariate mortality HR for Breslow thickness to be over 1.5 per mm. That 'Louisville' regards this HR as 1.26 is not comparable. The endpoint outcomes were different in El Sharouni and MSLT-1. Our comparison concerned the online prediction tools, not their originating data sets.

We do not consider that the C-statistic of 0.59 holds special weight as a cut-off point. We simply identified that the 0.59 figure distinguished BAU components as more powerful predictors than SSS in the BAUSSS biomarker.

We disagree with Lo that the C-statistic alone without its curve confers all information. If one aims for higher sensitivity, which is probably more reasonable to determine which melanoma patients are at higher risk of death, sensitivity of each biomarker cannot be determined using the C-statistic.

Lo questions the validity of our findings. Yet, their presented data validate the key findings in our analysis. (1) BAUSSS is a simple, reliable and effective predictor of survival risk in melanoma patients. (2) It incorporates information from the pathology report and patient history, without the added sentinel lymph node biopsy (SLNB)-associated surgery, investigations, anaesthesia, costs or hospitalization. (3) Adding SLNB status (SLNBS) to BAUSSS increases the survival risk assessment accuracy by 2.6%–4.6%. Such an increase is not guaranteed to be meaningful, especially if the survival C-statistic remains in the 70%–80% range, considered the fair interpretation range.[8] Confidence limits between prediction data from BAUSSS versus BAUSSS + SLNBS frequently overlap (Figure 1).

Lo incorrectly suggests that we regarded those with no known SLNBS as being negative.

We thus maintain that Lifemath is the only identified online survival nomogram that has a reliable BAUSSS biomarker assessment tool whilst having no major design faults.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Lifemath data are publicly available at http://www.lifemath.net/cancer/. Lo et al. SLNB positivity risk data are publicly available at www.melanomarisk.org.

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