ESTIMATING SCENARIOS FOR SURVIVAL TIME IN PATIENTS WITH METASTATIC MELANOMA RECEIVING IMMUNOTHERAPY OR TARGETED THERAPY

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Background It is important for advanced cancer patients to understand their prognosis. This allows patients to plan appropriately for end-of-life. Unfortunately, many patients do not understand their life expectancy, often overestimating their likely survival time. Estimating survival in metastatic melanoma is particularly difficult, as immunotherapy and targeted therapies extend survival time and revolutionize care. We have previously shown that three survival scenarios (worst-case, typical, best-case), calculated using simple multiples of median overall survival (OS), 0.25x, 0.5-2x, 3x, respectively, is a useful framework to estimate and communicate survival time to advanced cancer patients.

Methods This study aimed to determine whether three survival scenarios accurately estimate prognosis for metastatic melanoma patients receiving immunotherapy or targeted therapy. We searched Medline, EMBASE, and Cochrane Central Register of Controlled Trials for phase II/III randomized controlled trials (treatment arms n ≥90) of patients with unresectable stage IIIC/IV cutaneous melanoma receiving immunotherapy or targeted therapy from January 2001 to February 2022. We extracted OS data from Kaplan Meier curves and compared it to our multiples of median OS.

Results 26 trials (12,345 patients) were included. Our estimates of worst-case scenarios ranged from 3.29 (interquartile range [IQR] 2.82-3.76) to 6.82 (IQR 4.48-18.93) months; most-likely lower-typical from 6.57 (IQR 5.64-7.52) to 13.64 (IQR 8.96-18.93) and upper-typical from 26.28 (IQR 22.58-30.07) to 54.55 (IQR 35.83-75.73) months; and best-case from 39.43 (IQR 33.87-45.11) to 81.83 (IQR 53.74-113.60) months, among patients receiving first-line targeted and immunotherapy, respectively. Our multiples of the median OS accurately estimated survival from anywhere between 16.7% to 100% of estimates.

Our scenarios tended to be more accurate for those receiving targeted (most between 70% to 100% accuracy) than immunotherapy (some as low as 16.7%); and second- (all between 50% to 100%) than first-line (some as low as 16.7%) treatment. We were unable to estimate scenarios for patients receiving first-line combination immunotherapy, as none of the treatment arms in this group met median OS. When we were inaccurate, we tended to overestimate survival.

Conclusions This study was limited by small sample sizes and immature data. The accuracy of our scenarios was more variable than previous work done by our team. Future research should include mature data and novel interventions when determining frameworks to communicate survival in metastatic melanoma.