Additional file 3: Tumor cost from oxygen consumption increase

In Koea and Shaw [1], oxygen consumption ($\mu$mol / kg min) as a function of tumor bulk (g) is given. The slope is 41 $\mu$mol / kg tumor/ min/kg patient ($r^2=0.79$). To convert this into the cost of cancer as a function of tumor bulk in kcal/kg tumor/day/kg patient, the oxygen consumption per tumor bulk ($\mu$mol / kg tumor/ min/kg patient) is converted to ml oxygen/kg tumor/min/kg patient) using the conversion $0.022391 \text{ ml} = \mu\text{mol } O_2$. This is converted to kJ/kg tumor/min/kg patient by the conversion $21.1 \text{ kJ} / O_2$ [2]. This is converted to kcal/kg tumor/day/kg patient using standard conversions. As patient mass was not given in this study, converting this value precisely to kcal/kg tumor/day was not possible; however we assume average patient weight was between 60 and 70 kg [3] to offer a range of values of tumor cost in kcal/kg tumor/day.

References