Supplementary Online Content


eMethods. Supplemental Methods

eFigure, A. Graphical Illustration of How the Plausibility Index Value Is Calculated for the Comparison of Treatment With MaxRP vs MaxRT for the End Point of the Risk of PCSM

eFigure, B. Graphical Illustration of How the Plausibility Index Value Is Calculated for the Comparison of Treatment With MaxRP vs MaxRT for the End Point of the Risk of ACM

This supplementary material has been provided by the authors to give readers additional information about their work.
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Description of the Plausibility Index

The plausibility index, taken from Bayesian statistics, is ideally suited in situations like the clinical scenario we address where in clinical practice few men are given adjuvant EBRT and/or ADT after RP (even when indications such as + margins, extracapsular extension and/or seminal vesicle invasion exist) leading to small sample sizes for analysis and as a result wide 95% confidence intervals on the point estimates for the AHR of treatment comparisons for the risk of PCSM and ACM. Using the plausibility index we can calculate the likelihood that within a 95% confidence interval for the AHR of the treatment comparison for the endpoints of the risk of PCSM and ACM what the likelihood is that the two treatments being compared will lead to a similar risk of PCSM and/or ACM (i.e. true AHR = 1.0). This likelihood termed the plausibility index is reflected in the p-value for the treatment comparison in the adjusted analysis. Specifically, the p-value represents the probability that the null hypothesis: “there is no difference in the risk of PCSM or ACM between the 2 treatments being compared” is true. So the smaller the p-value (e.g. a p < 0.05 or our current standard for rejecting the null hypothesis and concluding that the there is a significant difference in the risk of PCSM for the 2 treatments being compared) the less likely it is that the true AHR equals 1.0 and therefore the lower the plausibility index. Specifically, for a p < 0.05 there is < 5% chance that there no difference in the risk of PCSM following these 2 treatments as was the case for RP and ADT versus MaxRT where the p-value was 0.01 and the plausibility index that the true AHR = 1.00 was only 4.75% in our study.
Conversely, a p-value of 1.00 would indicate that there is no significant difference in the risk of PCSM or ACM for the 2 treatments being compared. In our study, the p-value or the likelihood that there was no difference in the risk of PCSM following treatment was lower for the comparison of RP and EBRT vs MaxRT given the p-value = 0.34 as compared to MaxRP vs MaxRT given the p-value= 0.58 and this is reflected in the lower plausibility index that the true AHR = 1.0 for the comparison of RP + EBRT vs MaxRT of 58.24% as compared to MaxRP vs MaxRT of 76.75% as shown in efigure1a.

**Equation used to calculate the plausibility index**

\[
\text{Plausibility Index} = T_0 f(T_0) + (1-F(T_0)),
\]

where \(T_0\) is the observed Chi square test statistic, and \(f(t)\) and \(F(t)\) denote the probability density function and the cumulative distribution function of the chi square distribution with one degree of freedom.
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**eFigure, B.** Graphical Illustration of How the Plausibility Index Value Is Calculated for the Comparison of Treatment With MaxRP vs MaxRT for the End Point of the Risk of ACM