

Adjusting Expected Value of Sample Information Using Realistic Expectations around Implementation

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Adjusting EVSI using realistic expectations around implementation

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We thank Eckermann and Willan for their interest in our work [1]. While the writers of this letter [2] recognise that our work represents a useful addition to the literature, they express concerns about the way that we have estimated the expected value of sample information (EVSI) under perfect implementation (we use the word "optimal" with regard to implementation). In particular, Eckermann and Willan assert that we have estimated the expected value of sample information (EVSI) with perfect implementation *"as though conducting no further research will result in implementation of the option with the lowest INB, rather than maximising the INB given current evidence"*.

Unfortunately, Eckermann and Willan appear to have misunderstood the way we have calculated EVSI with optimal implementation in our paper. In estimating this figure, we agree that the "counterfactual" should be the option that maximises the net monetary benefit (which they call INB) given current evidence. This is precisely the way we have calculated this EVSI figure, as the difference between the "factual" figure, representing the expected NMB if research takes place (£318.11 million, cell L in Table 2 of our paper), and the "counterfactual" figure, representing the maximum NMB under current evidence (£293.12 million, cell C in Table 2). It should be obvious from Table 2 that the figure that we have used for the counterfactual is indeed the highest of the NMB figures for current information. The resulting EVSI figure, £24.99 million, is given in Table 3 of our paper (page 7).

We, of course, agree with Eckermann and Willan in that decision context is important; taking this into account and expressing EVSI in a way that reflects more closely the interplay between information and implementation is the key motivation for our paper. In doing so, we account for the fact that availability of additional information is expected to improve implementation, but it will not necessarily lead to instantaneous and perfect implementation. Eckermann and Willan appear to share this view in their letter [2]. Given this, one can easily see why EVSI with improved

implementation (i.e. higher than 'current' implementation but lower than 'optimal' implementation) is expected to result in higher NMB than EVSI with 'current' implementation, and lower NMB than EVSI with 'optimal' implementation.

We thank Eckermann and Willan for recognising the potential of our proposed framework to provide a useful tool for value of information analysis, and we hope that it is now clear to them that our calculations are correct, based on the counterfactual option that maximises NMB given current evidence.

References:

[1] Andronis L, Barton P. Adjusting estimates of the expected value of information for implementation: theoretical framework and practical application [Epub ahead of print 2015 Nov 13]. *Med Decis Making*. pii: 0272989X15614814.]

[2] Eckermann S, Willan A. EVSI with imperfect implementation: improving practice and reducing uncertainty with appropriate counterfactual consideration. *Med Decis Making*. In press.