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P0130 Cost-effectiveness analysis of serum galactomannan assay in conjunction with mould-active antifungal prophylaxis during myelosuppression

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Background: Galactomannan (GM) immunoassay can complement the diagnosis of invasive aspergillosis (IA) and optimise treatment decisions. The adoption of mould-active prophylaxis has greatly reduced the incidence of IA and challenged its use. Through decision-analytic model, we examined the cost-effectiveness of various prophylaxis-biomarker strategies.

Materials/methods: Using an economic model, we assessed the cost-effectiveness of twice-weekly GM surveillance strategy among acute myeloid leukaemia patients at risk of developing IA, segregating patients by the use of mould-active versus non-mould-active prophylaxis. A decision-analytic Markov model was run according to the screening cycle i.e. weekly for the initial 16 weeks followed by a life-time using yearly cycle. The analysis was conducted from societal perspective encompassing direct and indirect cost. The outcomes of interest were lifetime costs and quality-adjusted life years (QALYs) gained. Additional cost associated with each successful outcome was calculated and presented as incremental cost-effectiveness ratio (ICER). We used probabilistic sensitivity analysis to account for uncertainties of model inputs. Results of probabilistic sensitivity analysis were presented as a cost-effectiveness acceptability curve indicating likelihood of GM surveillance being cost-effective intervention over a range of willingness-to-pay threshold values.

Results: Routine GM immunoassay during mould-active prophylaxis was associated with a higher ICER (S$104,932 or US$77,156 per QALY gained) compared to GM surveillance in non-mould-active prophylaxis. However, GM surveillance was cost-effective compared to no GM test if the comparison was made within the same type of antifungal prophylaxis. The cost of prophylaxis and incidence of IA were key drivers of the comparative cost-effectiveness identified by sensitivity analysis. GM surveillance in conjunction with mould-active prophylaxis would become cost-effective if the cost of mould-active agent fell by 20% or the rate of IA breakthrough increased from 2% to 7%. The likelihood of GM surveillance being cost-effective was 30% and 52% with concurrent mould-active and non-mould-active antifungal prophylaxis respectively, at a willingness-to-pay threshold of S$78,000 or US$58,600 per QALY gained.

Conclusions: Routine GM immunoassay was cost-saving compared to no GM test. Collectively as a prophylaxis-biomarker strategy, GM surveillance during mould-active prophylaxis was not cost-effective. The cost-saving harnessed from reduced empirical antifungal treatment was negated by the high cost of mould-active agent.