

Supplementary materials

Title: Immunoglobulin replacement versus prophylactic antibiotics for infection prevention in patients with acquired hypogammaglobulinemia secondary to haematological malignancies: an economic evaluation of the RATIONAL feasibility trial

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Table S1. Resource use items and costs

Description	Cost per item (AU\$ 2023)	Source
Resource use costs		
Hospitalisation per day	\$2,706.61	NHCDC 24 (2019-2020) ^a
Emergency department admission	\$929.84	NHCDC 24 (2019-2020) ^b
Intensive care Unit (per day)	\$5,850.0	ANZIC (2019-2020) ^c
Specialist consultation	\$161.90	MBS item 110
General practitioner	\$58.35	MBS items 23, 36
Day procedure	\$1,896	NHCDC 24 (2019-2020) ^d
Lymph biopsy	\$51.25	MBS item 30078
Xray	\$43.15	MBS items 58500, 58503, 58900, 58903
Culture	\$31.99	MBS items 69354, 69333, 69345, 69303
PCR	\$42.50	MBS items 69479
Prophylactic treatment		
Ig (cost/gram)	\$72.49	MSAC 1695 (2019) ^e
IVIg administration	\$1,081.35	Alfred Health (2023) ^f
SCIg administration	\$200	Blood Matters Programme (2023) ^g
Trimethoprim +sulfamethoxazole (DPMQ)	\$14.83	PBS item 2951H
Doxycycline 100g, 50g (DPMQ)	\$22.90, \$15.22	PBS item 10779H, 2711Q

Abbreviations: DPMQ: dispensed price for maximum quantity; Ig: immunoglobulin; IVIg: intravenous immunoglobulin; MSAC: Medical Services Advisory Committee; NHCDC: National Hospital Cost Data Collection; PBS: Pharmaceutical Benefits Scheme; SClg: subcutaneous immunoglobulin;

*An inflation index was applied to all costs prior 2023, based on the Australian Consumer Price Index- Medical and hospital services March 2023

^a Total cost per patient per hospital admission per day

^b Total cost per patient per emergency admission^c ANZICS Centre for Outcome and Resource Evaluation 2019 Report: Accessed on 13/09/23: <https://www.anzics.com.au/wp-content/uploads/2020/11/2019-CORE-Report.pdf>

^d Average cost of same day procedures, using the most applicable codes in the NHCDC 24 (B40Z and M40Z)

^e Wyndham, A, Vogan, A, Newton, S, Schubert, C. (2019). Immunoglobulin for acquired hypogammaglobulinaemia secondary to haematological malignancies, or post-haemopoietic stem cell transplantation (HSCT). MSAC Application 1565, Assessment Report. Commonwealth of Australia, Canberra, ACT

^f Private communication. Calculated as a day admission at the current Victorian Efficient Price.

^g Consultation Paper on the Pricing Framework for Australian Public Hospital Services 2023-24. NBA Blood Matters programme.

Accessed on 13/09/2023: https://www.ihacpa.gov.au/sites/default/files/2022-09/blood_matters_program_national_bloody_authority.pdf

Table S2. Sensitivity analyses - Cost-effectiveness results

Trial-based 1-year results	Prophylactic Ig Mean (95%CI)	Prophylactic antibiotics Mean (95%CI)	Difference Mean (95% CI)
Results adjusted by EQ-5D-derived baseline utility			
Total costs per person	\$46,372 (35,652, 57,093)	\$17,728 (9,920, 25,537)	\$28,644 (15,454, 41,833)
QALY per person	0.817 (0.776, 0.858)	0.851 (0.822, 0.880)	-0.041 (-0.101, 0.019)
Serious infections per person	0.25 (-0.15, 0.64)	0.52 (0.23, 0.81)	-0.27 (-0.78, 0.22)
All infections per person	2.73 (1.83, 3.63)	2.12 (1.46, 2.77)	0.61 (-0.51, 1.73)
ICER (cost/QALY)	Ig dominated (more costs, fewer QALYs)		
ICER (cost/serious infection)	\$104,744 per serious infection prevented		
ICER (cost/any infection)	Ig dominated (more costs, more infections)		
Net monetary benefit	-32,976 (-45,678, -19,958)		
Results using EORCT-QLQ-C30-derived utilities			
Total costs per person	\$46,953 (38,474, 55,431)	\$17,813 (9,345, 26,280)	\$29,140 (15,941, 42,340)
QALY per person	0.614 (0.490, 0.738)	0.716 (0.657, 0.775)	-0.102 (-0.219, 0.158)
ICER (cost/QALY)	Ig dominated (more costs, less QALYs)		
Results assuming 16% of Ig patients receive SCIg			
Total costs per person	\$46,621 (38,471, 54,771)	\$17,813 (9,345, 26,280)	\$28,809 (15,703, 41,915)
QALY per person	0.614 (0.490, 0.738)	0.716 (0.657, 0.775)	-0.102 (-0.219, 0.158)
ICER (cost/QALY)	Ig dominated (more costs, less QALYs)		
Results assuming 50% of Ig patients receive SCIg			
Total costs per person	\$44,866 (36,648, 53,084)	\$17,813 (9,345, 26,280)	\$27,053 (13,929, 40,178)
QALY per person	0.614 (0.490, 0.738)	0.716 (0.657, 0.775)	-0.102 (-0.219, 0.158)
ICER (cost/QALY)	Ig dominated (more costs, less QALYs)		

Abbreviations: CI: confidence interval; Ig: immunoglobulin; ICER: incremental cost-effectiveness ratio; QALY: quality-adjusted life year
All costs are in \$AU 2023

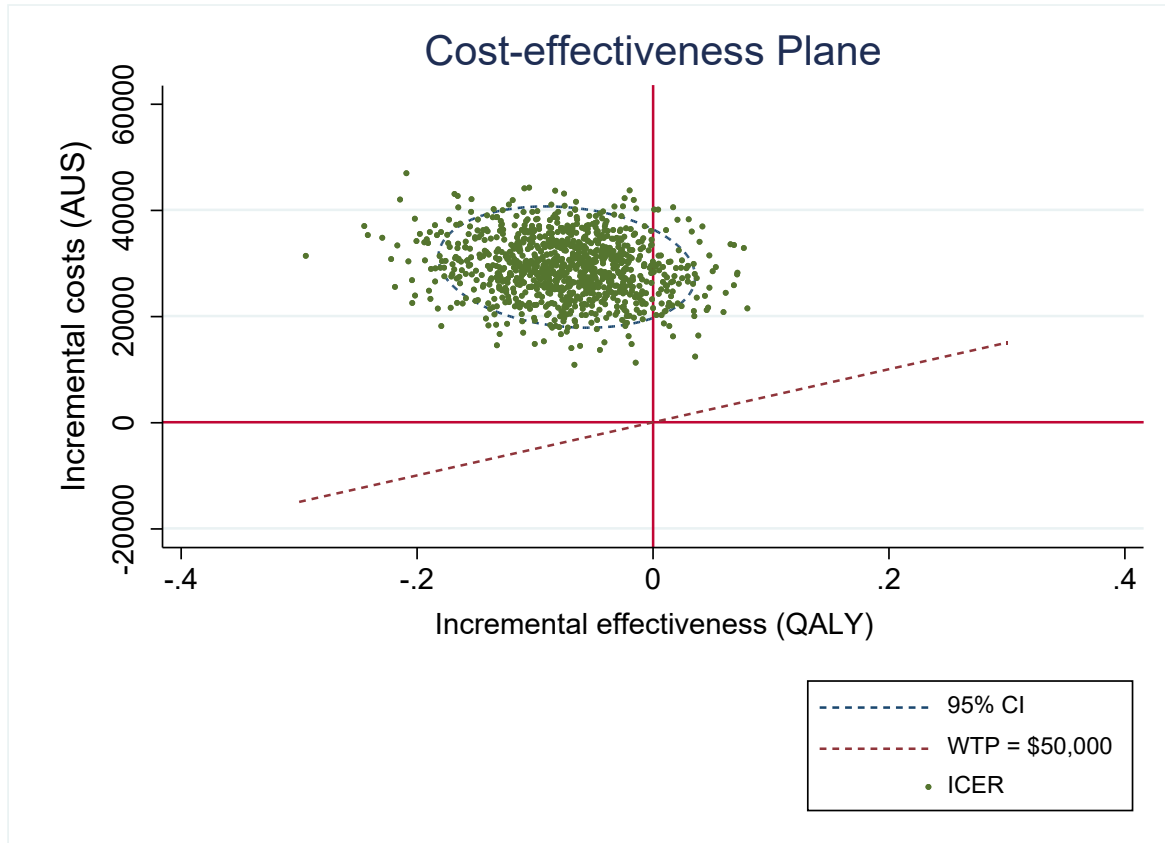


Figure S1. Cost-effectiveness plane (adjusted by baseline utility): Ig vs. antibiotics

Probabilistic sensitivity analysis. The ellipse represents the 95% CI around the ICER points, calculated via bootstrap (1000 iterations). The ICER scatter lies over the willingness to pay line of AU\$50,000 per QALY, indicating prophylactic Ig is less effective and more costly than antibiotics in this population and at that WTP threshold.

Abbreviations: CI: confidence interval, ICER: incremental cost-effectiveness ratio, QALY: quality-adjusted life year, WTP: willingness to pay