

EVALUATION OF AVERAGE COST-EFFECTIVENESS RATIOS OF STANDARDS OF CARE ACROSS DIFFERENT INDICATIONS

Potluri R¹, Ranjan S², Khurana R², Lele AM², Prabhakar V², Bhandari H²
¹SmartAnalyst Inc., New York, NY, USA, ²SmartAnalyst India (Pvt.) Ltd., Gurgaon, India



INTRODUCTION

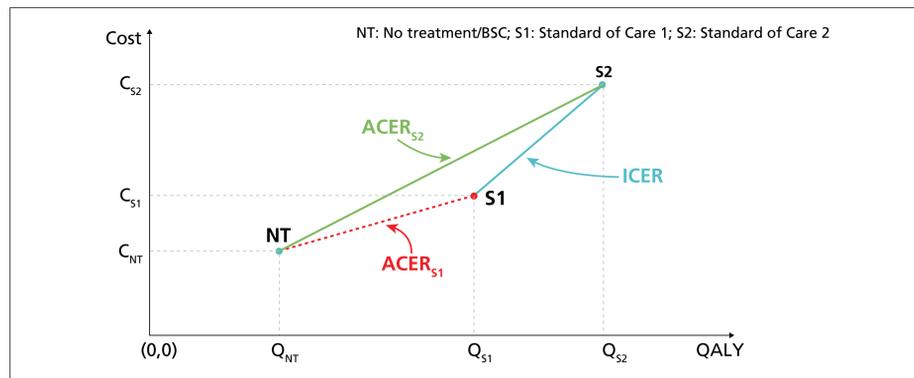
- Cost-effectiveness evaluations of new products are currently entirely focused on incremental cost-effectiveness ratios (ICERs) calculated over the standard of care (SoCs).
- Evaluations do not take into consideration the inherent/implicit cost-effectiveness of the SoCs themselves. The cost-effectiveness of SoCs, however, may vary considerably across indications owing to a variety of historical reasons.
- This results in healthcare budgets being spent disproportionately on different indications from a cost-effectiveness point of view.
- We argue that the average cost-effectiveness of the SoC also merits regular evaluation to enable comparison of value being derived from healthcare spend across indications.



METHODS

- Average cost-effectiveness ratio, or ACER, of an SoC has been determined as a ratio of the difference in costs between the SoC and no treatment/best supportive care (NT/BSC), to the difference in outcomes. See Figure 1.
- To ensure quality of this analysis, and to achieve consistency across indications, all underlying data required to carry out this analysis was sourced from economic evaluations published in National Institute for Health and Care Excellence (NICE) technology appraisals.
- Relevant therapeutic areas and indications were identified based on availability of manufacturers' submissions (MS) to NICE or ERG reports for the SoC.
- Indications, where none of the interventions evaluated against NT/BSC had a favorable guidance from NICE, were excluded from the analysis.
- Absolute cost and quality adjusted life years (QALY) outcomes for the SoC and the NT/BSC were extracted from the ERG reports (or MS in cases where ERG reports with relevant data was not available).
- ACER for indications with more than one SoC was estimated as a simple average of the ACERs of individual SoCs.
- All costs were adjusted to 2015 using inflation indices from the Personal Social Services Research Unit.
- 25 indications with relevant cost and QALY outcomes for SoC and NT/BSC were included for analysis. The considered indications spanned diverse therapeutic areas, including oncology, infectious diseases, immune disorders and endocrinology (Table 1).

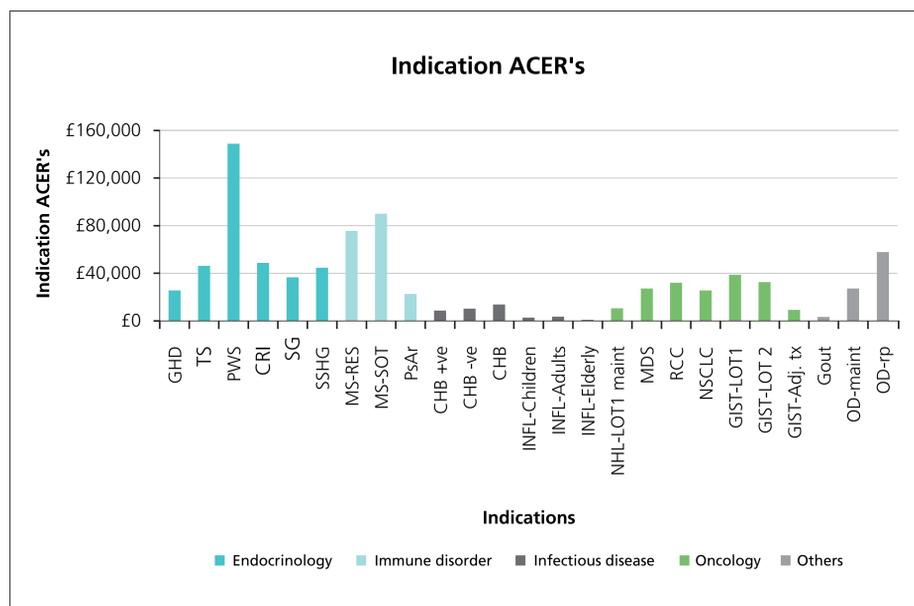
Figure 1. Estimation of ACER



RESULTS

- ACERs for the indications and the therapeutic areas have been presented in Table 1 and Figure 2.
- ACERs varied considerably, from a low of £717 (influenza in elderly) to the high seen in Prader-Willi syndrome of £148,675 with a mean of £33,700 and median of £27,190.
- ACERs showed considerable variance, not only between indications in different therapeutic areas, but also within the same therapeutic area.
- ACERs in endocrinology ranged from £25,485 to £148,675, oncology from £9,367 to £38,641; infectious diseases from £717 to £13,710, and immune disorders from £22,728 to £90,156.

Figure 2. ACERs for the various indications



GHD: Growth Hormone Deficiency; TS: Turner Syndrome; PWS: Prader-Willi Syndrome; CRI: Chronic Renal Insufficiency; SG: Short for Gestational Age; SSHG: Short Stature Homeobox-containing Gene; MS-RES: Multiple Sclerosis (rapidly evolving severe group); MS-SOT: Multiple Sclerosis (sub optimal therapy group); PsAr: Psoriatic Arthritis; CHB+ve: Chronic Hepatitis B - HBeAg +ve; CHB-ve: Chronic Hepatitis B - HBeAg -ve; CHB: Chronic Hepatitis B; INFL-Children: Influenza- Children; INFL-Adults: Influenza-Adults; INFL-Elderly: Influenza-Elderly; NHL-LOT1 maint: Non-Hodgkin's Lymphoma-LOT1 Maintenance; MDS: Myelodysplastic Syndrome; RCC: Renal Cell Carcinoma; NSCLC: Non-Small Cell Lung Cancer; GIST-LOT1: Gastrointestinal Stromal Tumors-LOT1 KIT +ve and Unresectable/Metastatic; GIST-LOT2: Gastrointestinal Stromal Tumors-LOT2 Unresectable/Metastatic; GIST-Adj. tx: Gastrointestinal Stromal Tumors-Adjuvant Treatment; Gout: Gout; OD-maint: Opioid Dependence-Maintenance; OD-rp: Opioid Dependence-Relapse Prevention

Table 1: ACERs for the various indications and the therapeutic areas

Therapeutic Area	Indication	ACER for the indication	ACER for the therapeutic area
Endocrinology	Growth Hormone Deficiency	£25,545	£58,341
	Turner Syndrome	£46,241	
	Prader-Willi Syndrome	£148,675	
	Chronic Renal Insufficiency	£48,496	
	Short for Gestational Age	£36,513	
	Short Stature Homeobox-containing Gene	£44,578	
Immune disorder	Multiple Sclerosis (rapidly evolving severe group)	£75,425	£62,770
	Multiple Sclerosis (sub optimal therapy group)	£90,156	
	Psoriatic Arthritis	£22,728	
Infectious disease	Chronic Hepatitis B - HBeAg +ve	£8,736	£6,648
	Chronic Hepatitis B - HBeAg -ve	£10,303	
	Chronic Hepatitis B	£13,710	
	Influenza- Children	£2,869	
	Influenza- Adults	£3,556	
	Influenza- Elderly	£717	
Oncology-Haem	Non-Hodgkin's Lymphoma-LOT1 Maintenance	£10,463	£18,879
	Myelodysplastic Syndrome	£27,296	
Oncology-solid tumor	Renal Cell Carcinoma	£32,149	£27,664
	Non-Small Cell Lung Cancer	£25,687	
	GIST-LOT1 KIT +ve and Unresectable/Metastatic	£38,641	
	GIST-LOT2 Unresectable/Metastatic	£32,474	
	GIST-Adjuvant Treatment	£9,367	
Others	Gout	£3,145	£29,392
	Opioid Dependence-Maintenance	£27,190	
	Opioid Dependence-Relapse Prevention	£57,840	



DISCUSSION

- Evaluation of reigning ACERs of the SoCs in different indications helps in obtaining an estimate of the economic value of the healthcare budget being spent in particular indications, and across the pharmaceutical product spectrum.
- As can be seen in the results, there is a very wide range of the reigning ACERs across different indications. It is reasonable to surmise that an expanded study covering more indications will further confirm this observation.
- Such an exercise can help policy makers in calibrating and evaluating currently accepted threshold ICERs.
- It also provides decision-makers with data that encourages them to consider permitting greater leeway for new products' ICER acceptability in indications where the SoC's ICER may be at the lower end of the range, and conversely, to tighten limits in indications where the current SoC's ACER may be at the higher end of the range, and thereby narrowing the range.

