

Economic analysis for early introduction of Amino Acid Formula for the management of Cow’s Milk Protein Allergy in the Gulf Co-operation Council (GCC) countries

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Background

- Cow’s Milk Protein Allergy (CMPA) is the most frequent food allergy in infants, affecting up to 5% of infants¹
- Cow milk protein is the first food given to an infant, and an adverse reaction to cow milk protein is the first sign of an atopic condition in infants²
- CMPA in infancy is associated with many other atopic manifestations, including a higher risk of atopic eczema, allergic rhinitis, and asthma at 10 years of age²
- Further, elimination of all cow’s milk products, without appropriate substitutions, can lead to malnutrition and/or specific nutrient deficiencies at a time when infants and children are growing²
- Use of hypoallergenic formulae such as extensively hydrolyzed formula, soy formula or amino acid-based formula (AAF [Neocate®]) are recommended³
- In infants with extremely severe or life-threatening symptoms, an AAF is considered as the first choice²



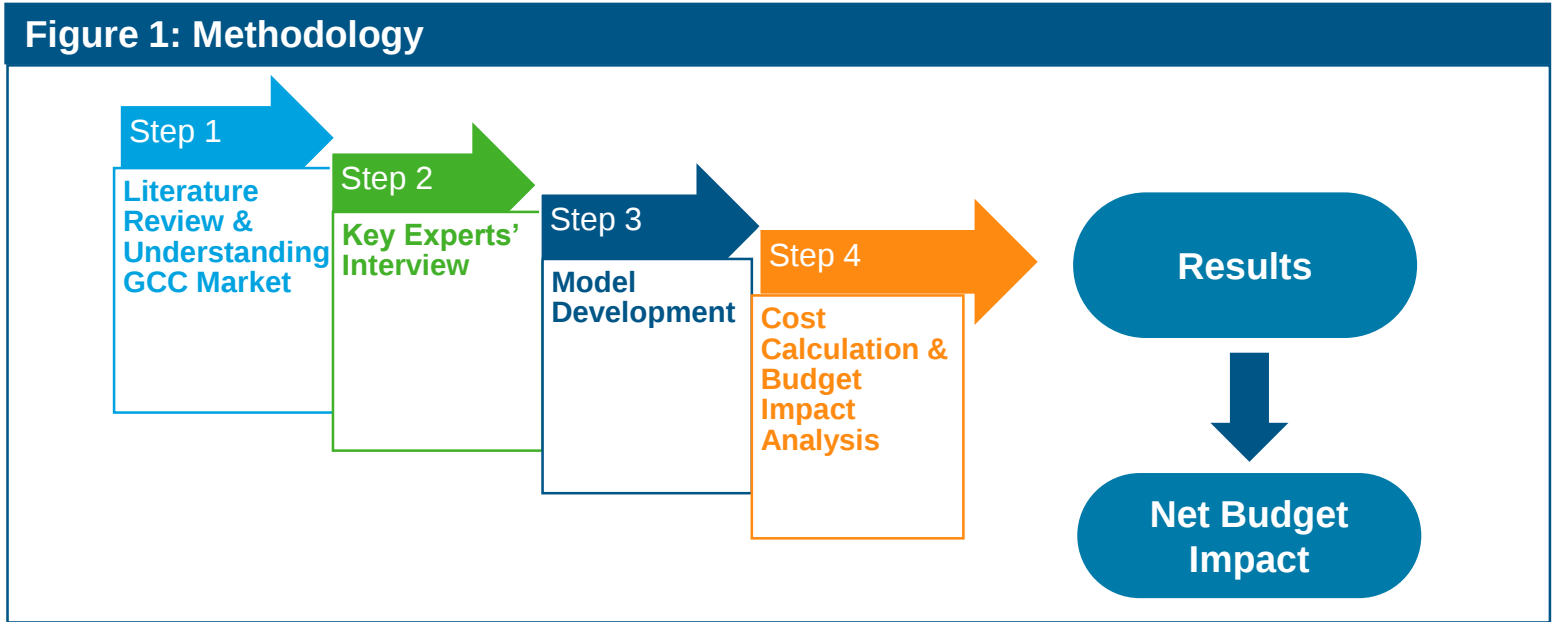
Objective

- To estimate the economic impact of the early introduction of AAF (Neocate®) for the management of CMPA on healthcare payers’ budget in three Gulf Co-operation Council (GCC) countries namely, the Kingdom of Saudi Arabia (KSA), Kuwait and United Arab Emirates (UAE).



Method

- A global decision tree model was adapted with an objective to compare the estimated costs in current practice of CMPA treatment versus a proposed practice where AAF is used as first-line therapeutic trial of suspected CMPA
- The model was developed from healthcare payer perspective where the patients were followed up for a period of three years
- Outcomes assessed in the model were net budget impact along with the total cost breakdown
- The overall methodology and the base case settings of the model are outlined in Figure 1 and Table 1 respectively



- The model was developed in accordance to data retrieved from secondary literature on population and cost inputs; and inputs about local clinical practice, resource and cost associated with current clinical practice by interviewing key opinion leaders (KOLs)
- Model Outputs:** The model assessed two scenarios:
 - i) Current practice: current practice of testing, medications, and referral or using alternative formulae
 - ii) Proposed practice: Early initiation of Neocate® AAF for infants (<24months) suspected with CMPA

Table 1: Base Case Settings for model	
Setting	Input/Source
Analytical tool	Microsoft® Excel
Currency	KWD (Kuwait), AED (UAE), SAR (KSA)
Perspective	Public healthcare payer (for KSA and Kuwait) Public and private healthcare payer (for UAE)
Eligible patient population	Children <24 months of age with suspected CMPA and not using breastmilk
Intervention	New strategy using Neocate®-AAF for all infants suspected with CMPA
Comparator	Current practice according to Brazilian guideline for food allergy

Abbreviations: AED: Arab Emirates Dirham; KWD: Kuwaiti Dinar; SAR: Saudi Arabian Riyal; UAE: United Arab Emirates

- The population included in the model were children with age <24 months with suspected CMPA and not using breastmilk in each of the three GCC countries
- The main costs included in model were drug acquisition costs, cost of formulas, cost of examinations and costs related with disease management
- The population and cost inputs considered in the model are presented in Table 2

Table 2: Population and cost inputs for BIM				
Population Component	KSA	Kuwait	UAE-private	UAE-public
Population between 0 and 24 months old	662,337 ⁴	82,858 ⁵	59,168 ⁶	25,358 ⁶
Percentage of breastfed children ⁷	37.0%	0.5%	13.1%	12.8%
Children that are not breastfed	417,272	82,440	51,402	22,104
Percentage of children with suspected CMPA ⁷	3.5%	4.8%	7.4%	3.5%
Children with suspected CMPA that do not use breast milk	14,605	3,957	3,791	774
Cost Component	SAR Currency	KWD Currency	AED Currency	AED Currency
Unit cost of formula	Inputs			
a. Soy formula	43.0	2.1	37.8	37.8
b. Extensively Hydrolyzed Formula	96.5	10.1	79.3	94.8
c. Amino Acid Formula	210.0	18.0	245.0	195.0
Number of cans used	Based on country specific KOL opinions			
Medication use cost	Total cost of medication calculated by age group using cost data from NUPCO, Kuwait MOH, UAE_SEHA for KSA, Kuwait and UAE respectively			
Cost of procedures and examinations	Costs of medical consultations (2 during symptomatic and 1 during asymptomatic period), medical staff costs and tests like RAST test for cow's milk, serological test were included as per the utilization estimated from KOL opinion.			

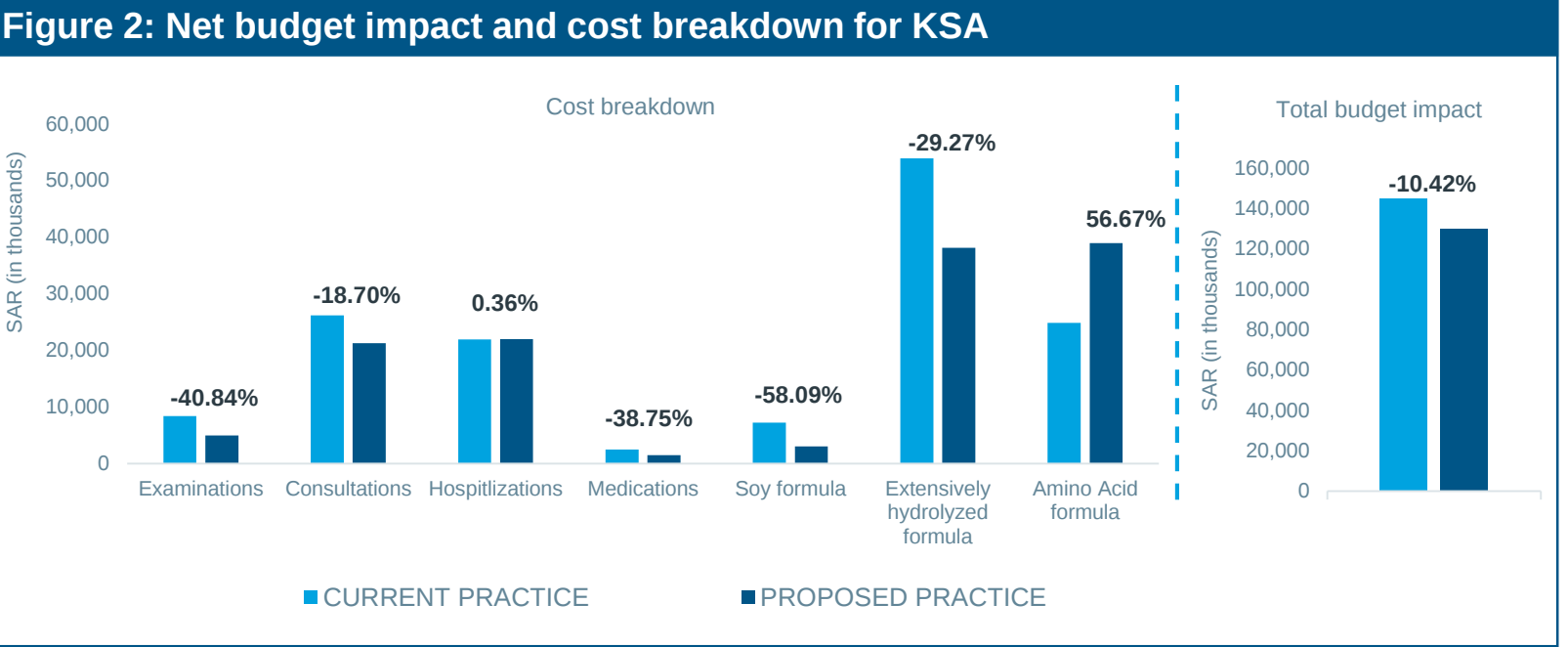
Abbreviations: AED: Arab Emirates Dirham; KOL: key opinion leader; KWD: Kuwaiti Dinar; MOH: Ministry of Health; SEHA: Abu Dhabi Health Services Company, NUPCO: National Unified Procurement Company; RAST: Radioallergosorbent Test; SAR: Saudi Arabian Riyal; UAE: United Arab Emirates



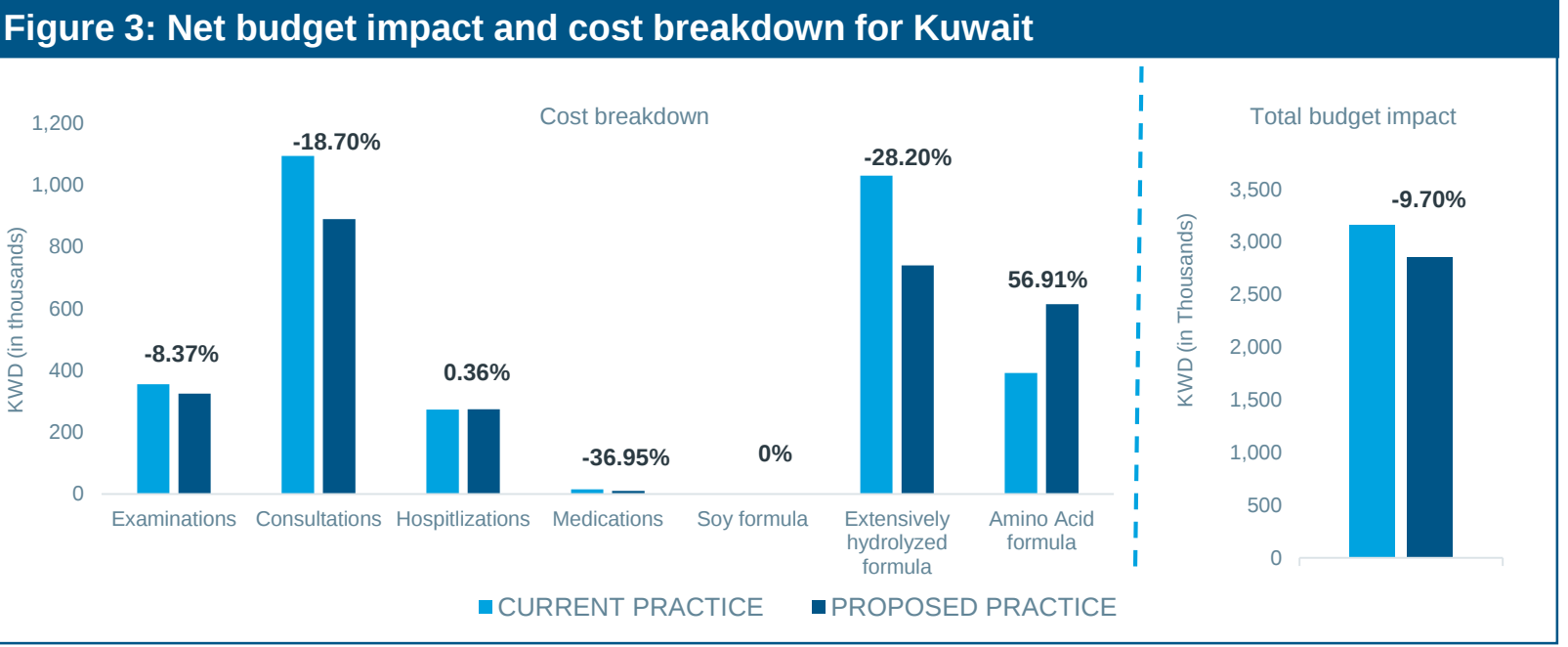
Result

Net budget impact and cost breakdown

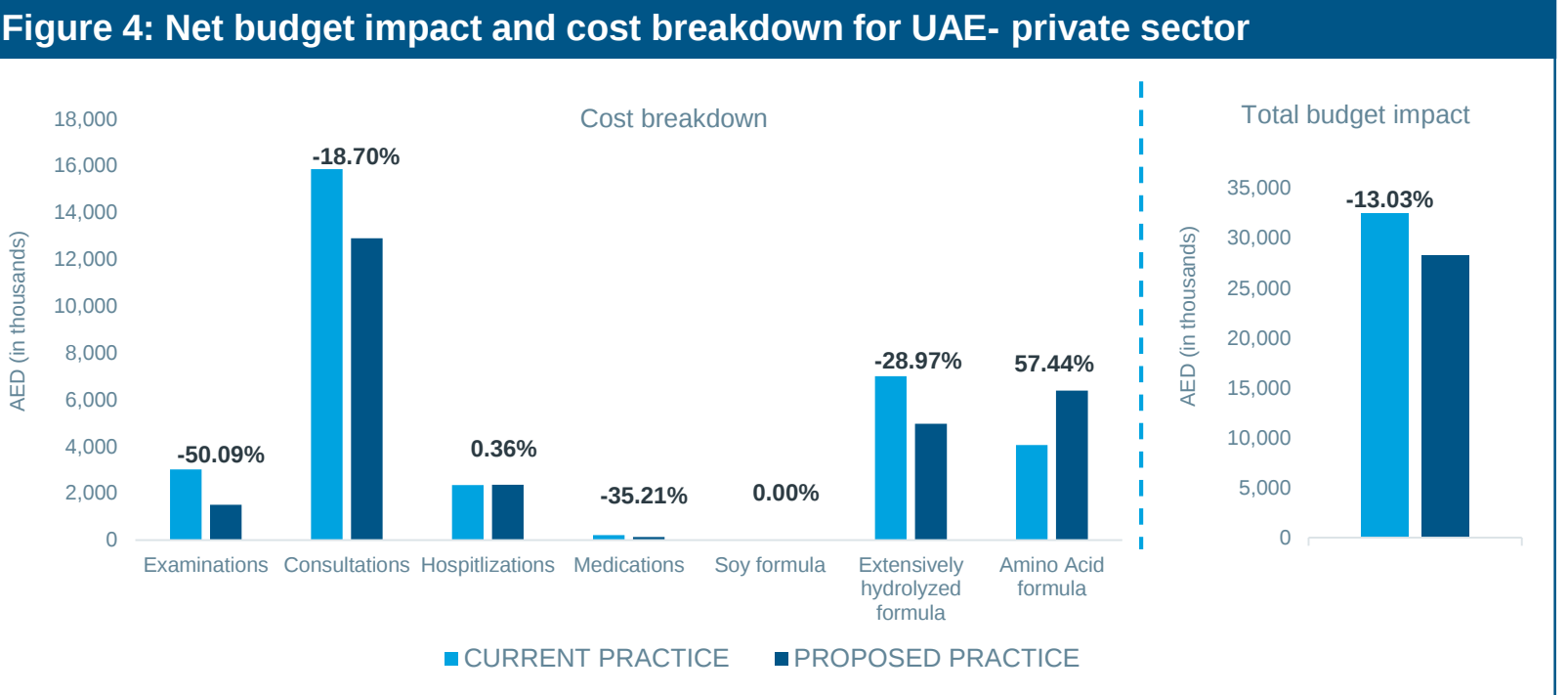
- The proposed early introduction of AAF (Neocate®) in the management of CMPA exhibited considerable cost savings; 10.4% (SAR 15,102,542) in KSA, 9.7% (KWD 306,565) in Kuwait, 13.0% (AED 4,232,932) in UAE private sector, and 17.3% (AED 1,842,018) in UAE public sector
- The cost impact was driven primarily by minimal use of soy formula in both KSA (58%; SAR 4,204,540) and UAE-public sector (58%; AED 110,331), reduced medication cost in Kuwait (37%; KWD 5,630) and decreased examination cost in UAE-public sector (58%; AED 351,919) and UAE-private sector (50%; AED 1,508,918)
- The total budget impact and cost breakdown observed in the two scenarios is presented in Figure 2 (KSA), Figure 3 (Kuwait), Figure 4 (UAE-private sector) and Figure 5 (UAE-public sector)



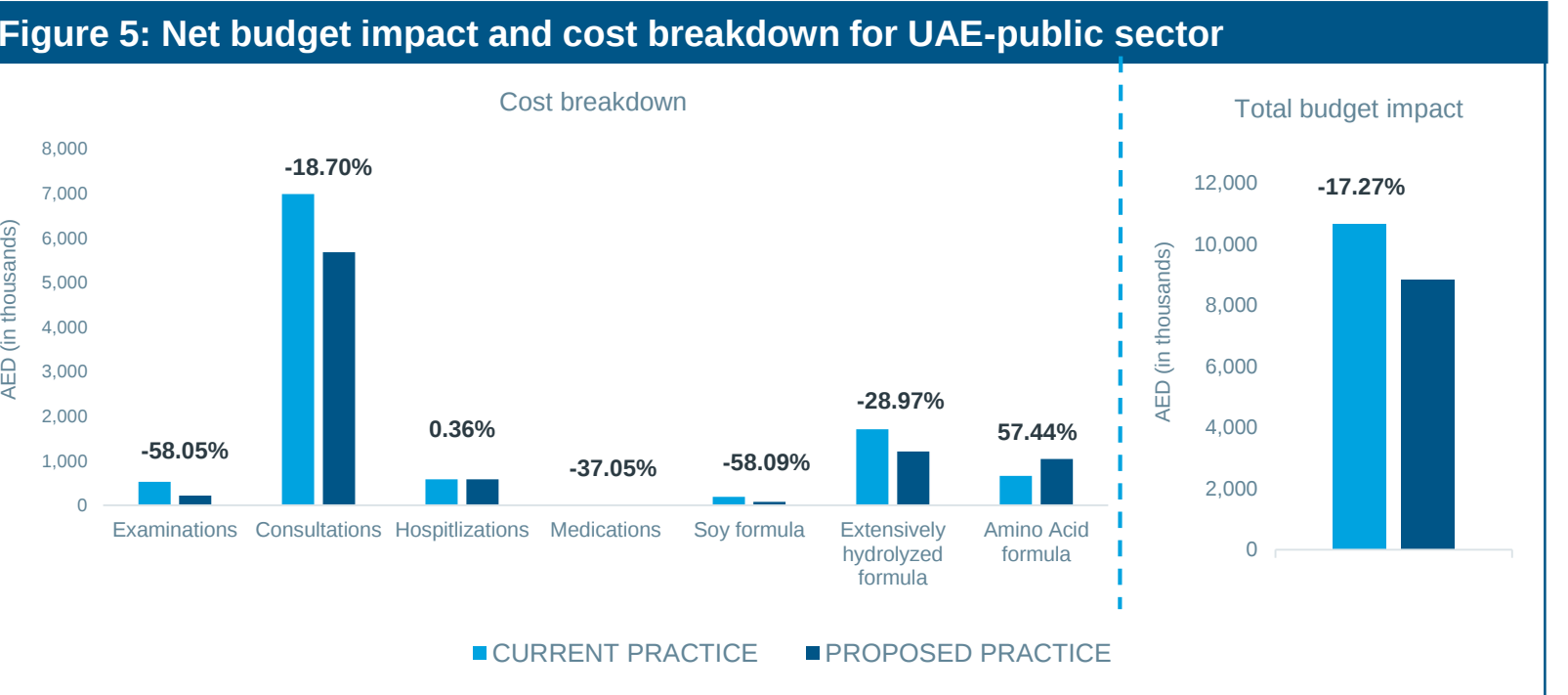
Abbreviations: SAR: Saudi Arabian Riyal



Abbreviations: KWD: Kuwaiti Dinar



Abbreviations: AED: Arab Emirates Dirham



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Conclusion

- The budget impact analysis demonstrated that the early introduction of AAF (Neocate®) in children <24 months suspected with CMPA will be cost-saving from a healthcare payer’s perspective of the KSA, Kuwait and UAE for the management of CMPA.
- The net budget savings were highest for UAE-public payer followed by UAE-private payer, KSA and Kuwait.
- With the proposed practice, the major cost-saving was attributed to a reduction in cost associated with soy formula use along with reduction in examinations (in KSA and UAE government perspective); reduction in cost of medications (all three countries) and extensively hydrolyzed formula (in Kuwait).



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- KOL opinion

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