

A cost-effectiveness analysis for high versus low dose caffeine for the treatment of apnea in neonatal intensive care unit

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OBJECTIVES

- The study is to evaluate the cost effectiveness of high dose (HD) caffeine as alternative therapy over the standard low dose (LD) caffeine for apnea of prematurity (AOP) in neonates, in Hamad Medical Corporation (HMC), Qatar

METHODS

Design

- A decision analytic model, with a follow-up duration until 37 weeks post-menstrual age, PMA (Figure)

Clinical inputs

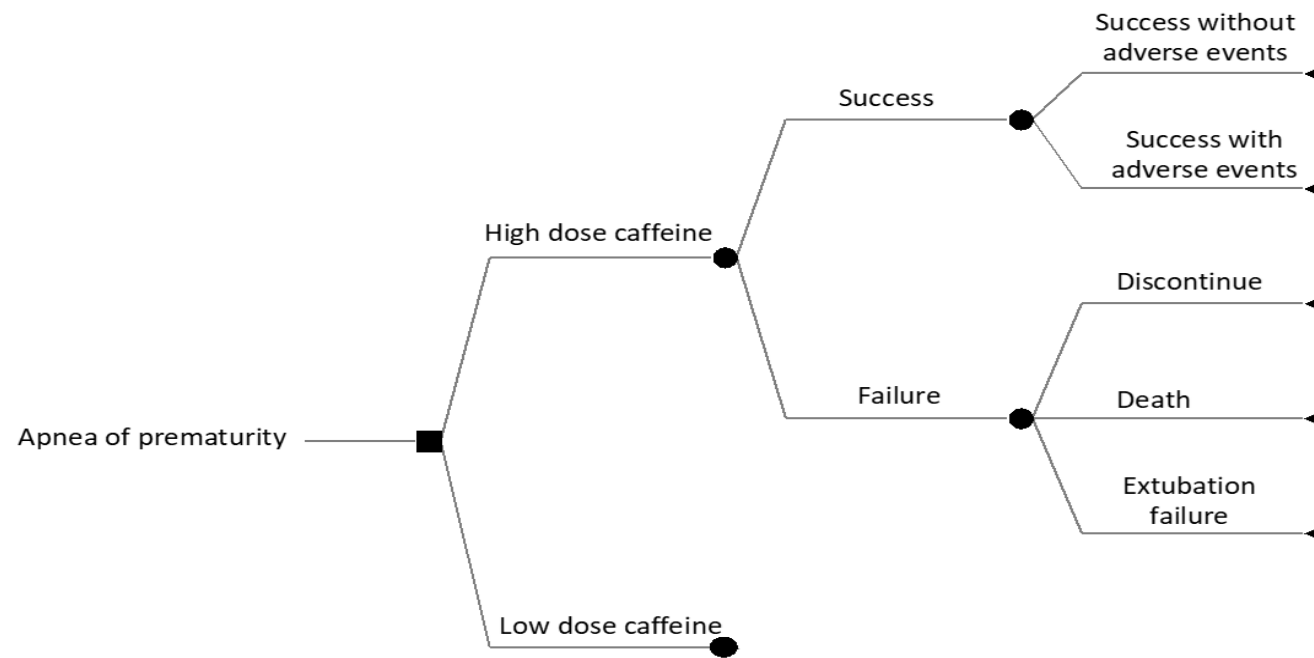
- Probabilities of clinical outcomes were based on meta-analyses (MA) by Chen et al, Brattstrom et al, and Vliegthart et al
- Data were reported in MA as risk ratio (RR)

Cost inputs

- Cost expressed in Qatari Riyal and based on 2021/22 financial year
- Cost and its calculations were from Qatari hospital perspective

Primary outcome

- Success was defined as survival with less than 3 apnea episodes per day and successful extubation removal within 72 hours



RESULTS

Outcome	HD caffeine, 95% CI	LD caffeine, 95% CI
Increased cost, HD caffeine (QAR)	365,415 (364,527, 366,302)	351,331 (350,612, 352,051)
Increased success, HD caffeine	0.849 (0.764, 0.913)	0.62, (0.517, 0.715)
ICER of HD versus LD caffeine	QAR 61,500 (55,480, 67,519)	

ICER: Incremental cost-effectiveness ratio, QAR: Qatari Riyal

- ICUR with HD caffeine exceeds the Qatari willingness to pay threshold of QAR 550,000 /success
- One-way and multivariate uncertainty analysis confirmed the study results

CONCLUSIONS

- HD caffeine is cost effective for the treatment of AOP
- The results support the use of HD over LD caffeine for the treatment of AOP in the state of Qatar

REFERENCES

- Chen J et al. Biomed Res Int. 2018;2018: 9061234
- Vliegthart et al. Archives of Disease in Childhood-Fetal and Neonatal Edition. 2018;103(6): F523-F9
- Brattstrom et al. Acta Paediatr. 2019;108(3): 401-10.