Hydrus® Microstent in combination with Cataract Surgery in Patients with mild to moderate POAG: Cost-Effectiveness Analysis in UK settings

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BACKGROUND

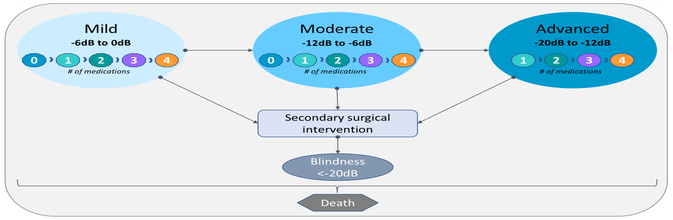
In UK, glaucoma affects approximately 4% of the population aged > 50 years, **86.5% of whom have POAG**[1]. Cataracts often present in a similar cohort of patients, with **comorbid glaucoma** occurring at rates ranging from 5.3% to 19.1% in patients undergoing cataract surgery[2-4].

In a **5-year trial (HORIZON)** Hydrus® Microstent demonstrated **superior benefits** when used in combination with cataract surgery (CS) to treat patient with **mild to moderate glaucoma**. This analysis **explores the cost-effectiveness** of Hydrus® Microstent + CS vs CS alone from the UK public payer perspective.

METHODOLOGY

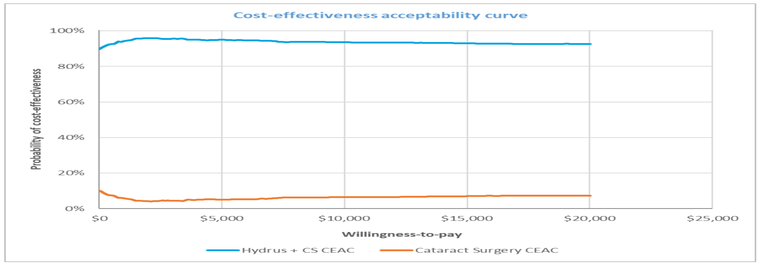
- **Type of analysis**: Cost-effectiveness analysis
- **Modeling method**: Semi-Markov model
- **Modeling approach**: Consistent with the HORIZON trials, the population was 71 years of age; 80% bilateral. Patient propagation was guided using the **annualized rate of progression** (RoP) informed by **a post-hoc analysis of 5-year visual fields loss (VFL) data** from HORIZON. The addition of medication was used as a proxy for irreversible progression and aligned with VFL changes according to the amount of VF lost per progression. As VFL increased, a corresponding increase in medications is assumed, allowing patients to transition to the next severe health state. Costs and quality of life weights were derived from UK publicly available sources and publications, where possible.
- **Time horizon**: 15 years
- **Perspective**: Public Payer Perspective
- **Country**: UK
- **Intervention**: Hydrus® + Cataract surgery (CS)
- **Comparator**: Cataract Surgery (CS) alone
- **Outcomes**
  - ✓Expected Patient's Quality of Life improvement (measured using Quality Adjusted Life years (QALY*) metric)
  - ✓Incremental Cost (Hydrus® + CS vs. CS alone)
  - ✓Incremental QALYs (Hydrus® + CS vs. CS alone)

MODEL STRUCTURE



RESULTS (Deterministic)

Parameter	Hydrus® + CS (Intervention arm)	CS alone (Comparator arm)	Absolute difference	Relative Difference
Total costs per strategy	£ 20,031	£ 20,953	**-£ 922**	-4.6%
Total Falls	3.649	3.797	-0.148	-3.9%
Total LYs	9.832	9.827	0.005	0.0%
Total QALYs	7.590	7.256	**0.334**	4.6%
Total LYs spent blind	0.034	0.131	-0.097	-74.1%
ICER	**Dominant**	**Dominant; adds QALYs without adding cost**		
Cost per SSI avoided	-£ 3,845	**Cost saving, and averts procedures**		
SSI use – Hydrus + CS	6.5%			
SSI use – CS	32.7%			



Cost-effectiveness scatterplot



CONCLUSION

- Hydrus® implantation + CS is **a cost-effective strategy versus CS alone** from the public payer's perspective in patients with mild-to-moderate POAG in the UK.
- Hydrus® + CS was associated with **4.4% lower cost** than CS alone (£20,031 vs £20,953) **and greater QALYs** (7.590 vs 7.256) over a 15-year horizon.
- The robustness of these results are further substantiated by probabilistic sensitivity analysis which predicts that at a willingness to pay threshold of £20,000/QALY, the **probability of Hydrus®+ CS being cost-effective is 90%.**

GRANT/RESEARCH SUPPORT

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References:

1. Chan MPY, et al. Glaucoma and intraocular pressure in EPIC-Norfolk Eye Study: cross sectional study. BMJ (Clinical research ed). 2017;358:j3889. doi:10.1136/bmj.j3889
2. Grimfors M, et al. Ocular comorbidity and self-assessed visual function after cataract surgery. Journal of Cataract & Refractive Surgery. 2014;40(7):1163-1169.
3. Liu Y, et al. Ocular comorbidities among cataract-operated patients in rural China: the caring is hip Study of Cataract Outcomes and Uptake of Services (SCOUTS), report No. 3. Ophthalmology. 2007;114(11):e47-e52.
4. Murray N, Murray T. The burden of ocular comorbidity in cataract patients in West Africa. Br J Ophthalmol. 2009;93(1):124-125