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Economic Appraisal of Prosthetic Replacement of the Ocular Surface Ecosystem (PROSE) in Canada

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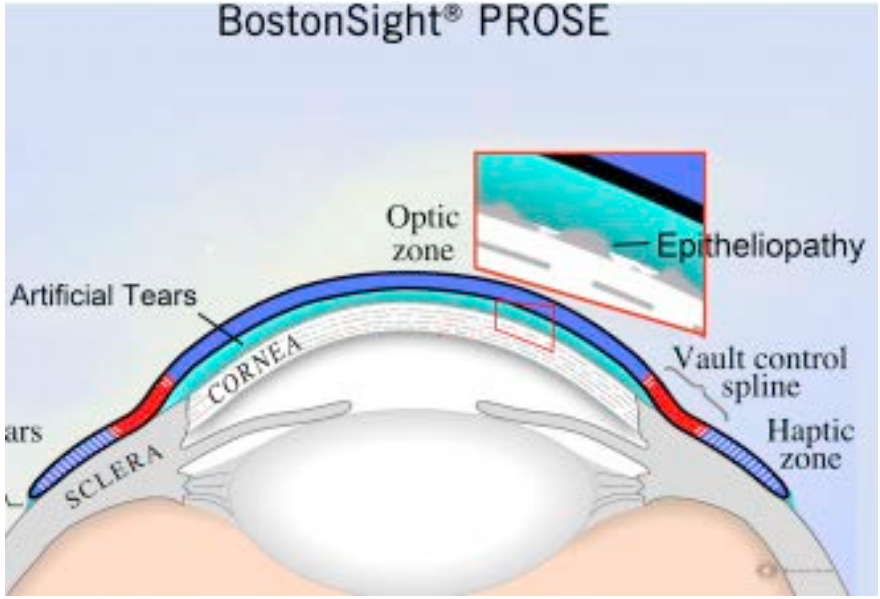
Introduction & Purpose

- Prosthetic Replacement of the Ocular Surface Ecosystem (PROSE) is a fluid-ventilated, gas-permeable scleral lens therapeutic device invented by BostonSight
- Used to treat patients with complex corneal disorders including ocular surface diseases and distorted corneal surfaces
- The last PROSE economic appraisal was conducted in 2009 based on patients in the United States
- The only PROSE clinic in Canada is in Toronto, Ontario at the Kensington Eye Institute (KEI)



Source: BostonSight

The purpose of this study is to provide an updated and Canadian perspective on the economic benefits of PROSE treatment.

Methods

- Retrospective chart review of patients at KEI PROSE clinic from 2018-2020
- Included patients who had all of their PROSE fitting appointments at KEI, received a PROSE device, and had baseline and final best corrected visual acuity (BCVA) available
- Converted BCVA improvement to utilities and then quality-adjusted life year (QALY) gain
- Calculated cost utility ratio
- Calculated benefit-cost ratio

Results

	Overall (n=76)	Distorted Corneal Surface (n=38)	Ocular Surface Disease (n=38)	p-value
Age, years (mean ± SD)	52.4 ± 18.4	49.9 ± 17.8	54.9 ± 18.9	0.24
Sex:				
Male	39 (51.3%)	21 (55.3%)	18 (47.4%)	0.82
Female	37 (48.7%)	17 (44.7%)	20 (52.6%)	

Group	Baseline BCVA, logMAR (mean ± SD) and Snellen	Final BCVA, logMAR (mean ± SD) and Snellen	p-value	ΔBCVA, logMAR (mean ± SD) and Snellen
Overall (n=76)	0.56 ± 0.46 20/73	0.14 ± 0.21 20/28	$2.68*10^{-13}$	-0.42 ± 0.41 20/53
Distorted Corneal Surface (n=38)	0.65 ± 0.19 20/89	0.14 ± 0.19 20/28	$5.42*10^{-8}$	-0.51 ± 0.48 20/65
Ocular Surface Disease (n=38)	0.46 ± 0.41 20/58	0.15 ± 0.24 20/28	$1.30*10^{-7}$	-0.31 ± 0.30 20/41
p-value	0.08	0.74		0.04

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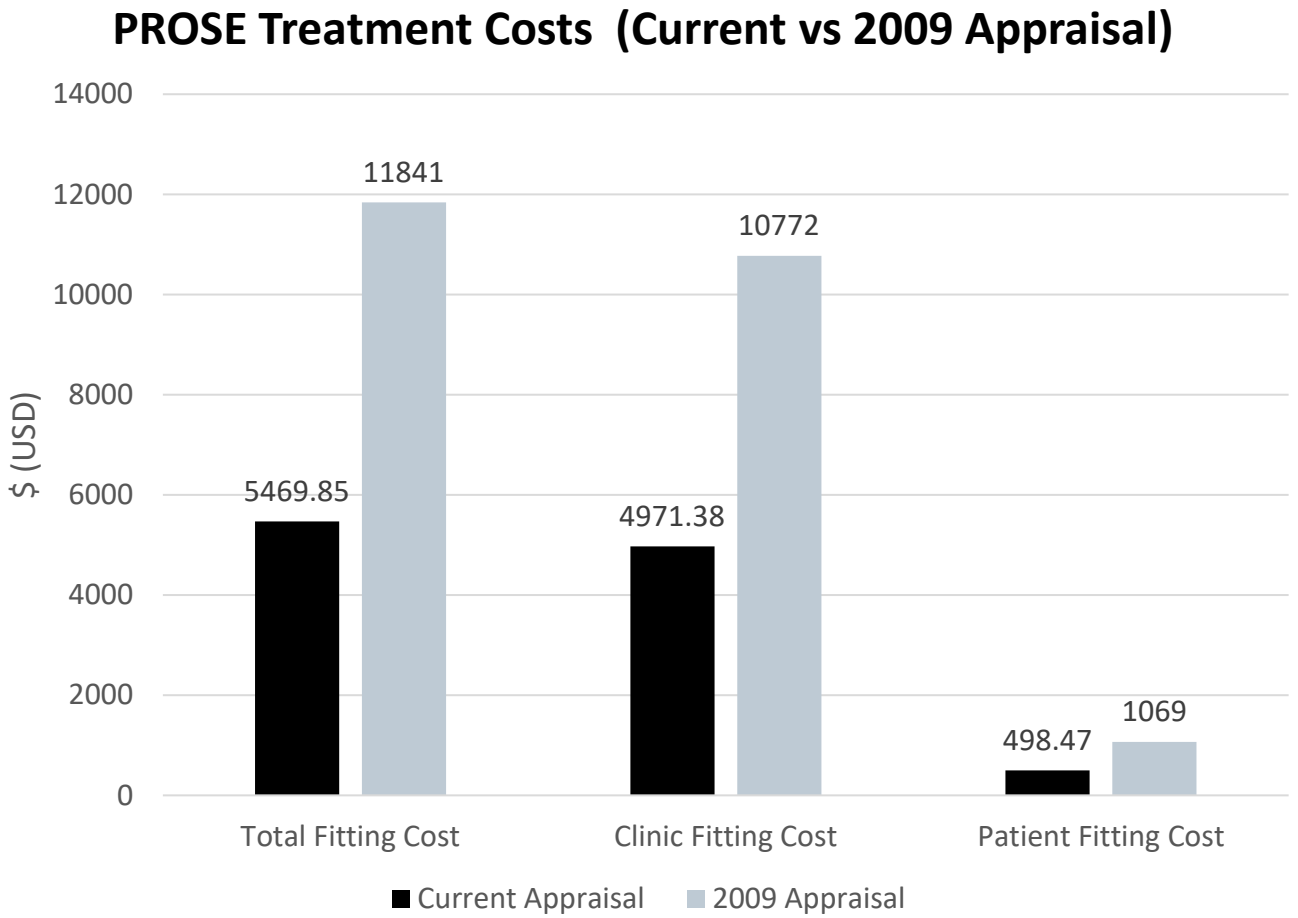
Results

Group	QALY Gain	Cost Utility ($/QALY)	Benefit-Cost Ratio
Overall (n=76)	0.51	10256.47 USD (13289.31 CAD)	34.4
Distorted Corneal Surface (n=38)	0.65	8439.79 USD (10935.44 CAD)	43.8
Ocular Surface Disease (n=38)	0.42	13069.90 USD (16934.67 CAD)	28.3



Conclusions

- PROSE treatment provides a **significant, cost-effective benefit** to patients
- Economic benefit of PROSE is **more pronounced** now than previously due to reduced device costs, lower clinical service costs, and increased U.S. Food and Drug Administration valuation of a life
- PROSE clinics are an **efficient investment** of health care funding

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Thank you for your attention!

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