1. It is generally accepted within eye care that medical management of glaucoma can cause or exacerbate signs and symptoms of ocular surface disease. Each additional BAK-preserved drop doubles the odds of corneal or conjunctival staining.

Zhang X, et al. Ocular surface disease and glaucoma medications: a clinical approach. Eye & Contact Lens 2019;45:11-18.

1. Benzalkonium chloride containing drops cause meibomian gland blockage, dysfunction, and dropout.

Arita R, et al. Comparison of the long-term effects of various topical antiglaucoma medications on meibomian glands. Cornea 2012;31:1229-34.

1. The combination of a prostaglandin and benzalkonium chloride is more toxic than either agent in isolation​.

Rath A, et al. In vitro effects of benzalkonium chloride and prostaglandins on human meibomian gland epithelial cells. Ann Anat 2019;222:129-38.

1. Rates of non-adherence to treatment are nearly triple in patients using preserved as opposed to preservative-free medications, primarily due to the prevalence of ocular surface disease.

Wolfram C, et al. Patient-reported nonadherence with glaucoma therapy. J Ocul Pharmacol Ther 2019;35:223-8

1. Topical glaucoma therapy with the preservative benzalkonium chloride induces a condition known as “glaucoma therapy-related ocular surface disease”.

Hollo G, et al. Preservative-free prostaglandin analogs and prostaglandin/timolol fixed combinations in the treatment of glaucoma: efficacy, safety, and potential advantages. Drugs 2017; doi.org/10.1007/s40265-017-0843-9

1. Glaucoma therapy-related ocular surface disease Increases in frequency and severity with number of drops and duration of therapy.

Pisella PJ, et al. Prevalence of ocular symptoms and signs with preserved and preservative-free glaucoma medications. Br J Ophthalmol 2002;86:418-23

1. Up to 60% of patients with medically managed glaucoma have ocular surface disease​, this is nearly 3x the prevalence in the general population.

Fechtner RD, et al. Prevalence of ocular surface complaint in patients with glaucoma using topical intraocular pressure-lowering medications. Cornea 2010;29:618-21