

Comment on: Videographic and microbiologic evaluation of eye drop bottle contamination in clinics: pilot study



We read with interest the recent study by Majmudar et al., which detailed the safety of multidose eyedrops regarding microbial contamination.¹ Multidose eyedrops are often discarded arbitrarily based on self-imposed use cessation dates (SUCDs) instead of U.S. Food and Drug Administration (FDA)-regulated expiration dates (FREDs). Importantly, FREDs are the only expiration dates assigned by a regulatory body.

Our recently published study analyzed clinic eyedrop volume usage at a Northeast hospital network and found cost savings and reduced waste with FRED utilization.² Several organizations have advocated for ophthalmic sustainability, including the removal of the SUCDs.^{3,4} The current paper by Majmudar et al. provides support for the safety of following FREDs, which are established by the FDA based on rigorous testing. We seek to provide additional support for the adherence to FREDs by detailing cost savings and waste reduction.

Majmudar et al. showed that eye clinic multidosing in a Midwestern hospital network was safe throughout the entire study duration.¹ We applied the analysis from our original study regarding multidose eyedrop usage rates to the Majmudar study to estimate cost savings and waste at their large health system.^{1,2}

We analyzed three of the most used multidose eyedrops in clinic settings in 15 mL bottle forms: phenylephrine 2.5%, proparacaine 0.5%, and tropicamide 1%. Average generic costs of each multidose eyedrop were found using online, publicly available drug pricing with a location set near the main Midwestern hospital network. Over a year, we found that there was 43.15 pounds of plastic bottle wastage and 41.61 L of medication wastage incurred simply because SUCDs were followed instead of FREDs. In addition, if FREDs had been followed, the hospital network could have saved \$107,657.

This analysis combined with the findings of Majmudar et al. form a cohesive argument for following FREDs instead of SUCDs.¹ FREDs reduce the amount of wastage that clinics produce while also saving money that can be used to improve patient care through increased staffing or other resources. As shown by Majmudar et al., following FREDs does not increase the risk for microbial transmission or consequent adverse outcomes for patients.

Since we did not conduct a life cycle assessment accounting for packaging and transportation of eyedrops to estimate total carbon emissions, the cost savings and wastage we report underestimate true values and further support the benefits of following FREDs.

Health care has one of the largest environmental footprints, accounting for 5% of the global environmental impact, with surgical fields such as ophthalmology as major contributors.⁵ In addition, medication shortages, including ophthalmic drops, are an increasingly common occurrence. Nonetheless, policies such as SUCDs, which were not intended to include multiuse eyedrops and have since been corrected, are still widely implemented and are environmentally detrimental.⁴ We hope that our current findings, combined with those of Majmudar et al. and Tan et al., will encourage ophthalmologists and clinics to establish guidelines that use multiuse eyedrops until FREDs instead of SUCDs. Such resource optimization will reduce both monetary costs and our healthcare carbon footprint while ensuring the highest quality of patient care.

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