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Reminder systems, not education, improve glaucoma adherence: Comments on Cook et al

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Inadequate adherence with glaucoma eyedrop therapy has been extensively documented. Cook et al[i]. plan a controlled interventional trial to improve adherence, for which the present report is the baseline data prior to randomization. Among methods to measure adherence, two devices have been used directly to measure eyedrop use: the Travatan Dosing Aid[ii] and MEMS cap containers[iii]. Previous studies with both devices show that even under ideal conditions only 70% of doses are taken, with subjects aware that their behavior is monitored and provided free drug[iv]. Detailed monitoring of pharmacy refill data confirms a similar adherence level[v], and the Cook et al data show a similar rate. Self-reported adherence is dramatically higher than either device-measured or pharmacy data and indicates that patients are unaware of how poor their adherence is. Cook et al. base some of their conclusions on a substantial number of patients monitored with MEMS cap, which is much more useful than basing models of adherence behavior on self-report, which dramatically over-estimates true adherence.

Cook et al found that 35% of variance in MEMS cap measurements of adherence was predicted by defined responses in areas of self-efficacy and motivation, along with dose frequency and race/ethnicity. Unfortunately, most of the variability in adherence remained unexplained. Cook et al report that those who were prescribed more complicated eyedrop regimens were more adherent, a finding that contradicts past publications[vi]. Adherence in large insurance databases clearly shows lower adherence with twice daily drugs such as carbonic anhydrase inhibitors and alpha agonists compared to once daily prostaglandins[4], which was not found by Cook et al. It is possible that they had insufficient statistical power to determine differences in adherence by drug type. The lower adherence by minority ethnicity patients has been repeatedly documented and is an area that requires more effective study to determine interventions that would be specifically effective in these persons, who have greater prevalence and morbidity from glaucoma.

At University centers that have participated in past adherence research, the pool of persons available for study may include those who have been counseled regarding adherence during routine care or past research projects. This potential source of bias should be made clear in such research. One useful instrument for the study of the effect of side effects on adherence is the Glaucoma Symptom Scale[vii], developed and validated to assess the specific

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complaints that are uniquely important to those with this disease. The NEI-VFQ, which focuses on central vision, is less inappropriate for glaucoma. In a group of patients whose baseline MEMS adherence is around 75%, it may be difficult to detect improvement with an intervention, based on past interventional trials. This can be dealt with by randomizing those with adherence of 50% or less, or by having very large sample sizes.

Two interventional, randomized clinical trials have already shown effectiveness of reminder systems to improve adherence[viii,ix], while educational efforts have minimal effect[x]. Use of daily cell phone calls and alarms at drop taking time improve adherence. It is vital to make it simpler for clinicians to identify non-adherent patients quickly, so that time-consuming discussions to improve adherence can be targeted to those most likely to benefit. Risk factors identified by Boland et al. that were associated with poor adherence confirmed those of prior research: younger age, African descent, short duration of therapy, less education, poorer mental status, and greater depression. A short questionnaire has been validated and published with high predictive power for non-adherence[xi]. This utilizes the data showing that non-adherent participants are more often unable to name their glaucoma medications, more likely to admit some missed doses over the past 2 weeks, feel that remembering eyedrops is difficult, and worry more about side effects (though adherent patients complain more about side effects).

The true magnitude of non-adherence with glaucoma eyedrops is worse than suggested by clinically based studies. Prior research shows that 23% of patients given an initial prescription for a glaucoma eyedrop do not fill a second one[xii]. Poor adherers also failure to return for visits[xiii], so adherence is dramatically understated when studied among those regularly returning for visits who agree to participate in research. Interventional trials, such as that planned by Cook et al., are needed to improve the outcomes of treatment for glaucoma patients.

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