

Knowledge, adherence and outcome in glaucoma

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Valorisation

In this valorisation paragraph the practical implications of this thesis and its impact at social and economic level are highlighted. Valorisation is defined as ‘the process of creating value from knowledge by making knowledge suitable and/or available for economic and/or societal use and translating that knowledge into competitive products, services, processes and entrepreneurial activity’.¹ Valorisation is about the impact that can be created through the transfer of scientific knowledge.

The European Glaucoma Society (EGS) has published the 4th edition of the Terminology and Guidelines for Glaucoma in 2014. These guidelines are intended to share the view of the EGS on the diagnosis and management of glaucoma.² They are widely used in Europe and the guidelines are also adopted by the Dutch Glaucoma Workgroup of the Dutch Ophthalmological Society.

In the light of the valorisation process of this thesis, a letter to the editor of the EGS Guidelines is presented to add value to the use of the next EGS Guidelines.

Dear editor of the EGS Guidelines,

In the thesis “Knowledge, adherence and outcome in glaucoma” interesting findings are published that can be useful in the writing process of a new chapter concerning adherence in glaucoma treatment in the next edition of the EGS Guidelines.

The 4th edition of the EGS Guidelines states that “the patient’s cooperation, described as adherence and persistence, with the prescribed glaucoma management is mandatory to obtain effective IOP lowering and to prevent glaucoma progression. No drug can work unless it is taken.”² It has now empirically been shown that progression of glaucoma is more common in non-adherent patients than in adherent patients.³ If adherence by having sufficient number of bottles of eye drops can be improved, it could reduce progression in a maximum of 13% of the progressive patients.³

Therefore, addressing adherence is an important aspect of glaucoma treatment. Discovering non-adherence is a challenge for most ophthalmologists. Besides, as the current EGS guidelines state, “patients themselves overestimate their adherence and persistence rate.”²

Knowing the risk factors and barriers of non-adherence can help identifying groups with a high risk of being non-adherent and identifying modifiable risk factors to improve adherence.

The 4th edition of the EGS guidelines describes four groups of factors encountered as common obstacles to glaucoma medication adherence^{2,4}:

- *situational/environmental (for example: major life events, unsteady life-style with many travels)*
- *medication (for example: costs, side effects, complicated dosing regimen)*
- *patients (for example: comorbidity, poor understanding of the disease)*
- *provider (for example: lacking communication with the doctor)*

According to the 4th edition of the EGS Guidelines, gender and stage of the disease were other influencing factors; men and patients with less advanced disease tend to be less adherent.²

These issues can be fine-tuned in order to give the EGS guidelines more value for the practicing ophthalmologist. The most patient-reported reasons for non-adherence are forgetfulness, unavailability of eye drops and difficulties with holding the bottle above the eye when applying eye drops.⁵ However, risk factors discriminate only to a limited extent between patients who are adherent and non-adherent.

One could therefore use several methods to measure non-adherence in order to identify non-adherent patients. Although electronic monitoring is seen as a gold standard to assess adherence, questionnaires and pharmacy data can be more practical.

A systematically developed questionnaire based on focus groups and experts' opinions that addresses non-adherence and relevant factors could be used.⁵ Questionnaires are relatively simple and inexpensive, but contain a risk of recall bias, socially acceptable behaviour and overestimation of adherence.

Pharmacy records were used to assess refill adherence in glaucoma patients.³ They showed that patients who have insufficient eye drops to cover a treatment period more often show progression of their glaucoma.³ Using pharmacy data and calculating the medication possession ratio helps to assess non-adherence and to identify those patients that are really at risk of progression because of non-adherence. It also gives an easy tool to improve non-adherence by

organising regular dispensing of glaucoma eye drops by the pharmacy to a patient. Pharmacy data can provide reliable information regarding a patient's adherence to therapy and cover an extended period of time.⁶ Timing of doses cannot be assessed with these data. It gives the upper limit of being able to be adherent.

However, going one step further in addressing groups with non-adherence, we should ask ourselves if it is really necessary to discover every non-adherent patient. As the aim of glaucoma treatment is to reduce glaucoma progression, it will be more efficient in daily practice if the ophthalmologist addresses non-adherence in patients in whom non-adherence affects the outcome of glaucoma; patients in whom the target pressure is not reached or in whom progression of visual field loss has been observed. It is especially in these groups that reducing non-adherence is important as it is needed to improve the outcome of glaucoma treatment.

For patients not achieving their target pressure four questions can be recommended to discover relevant non-adherence in a clinical setting:

- 1) how many days did you not use your eye drops in the last two weeks?*
- 2) are you satisfied with your eye drops?*
- 3) when did you use your last eye drop?*
- 4) did you discontinue using eye drops because of side effects?*

Not achieving the target pressure was related to being non-adherent in more than 43% of the time, dissatisfaction with eye drops, an incorrect last dosage moment and discontinuing the use of eye drops because of side effects. A clinically relevant improvement in the achieved target pressure could be realised by addressing the correct dosage moment and by addressing discontinuation of eye drops in patients that did not achieve their target pressure.

Another challenge is how to improve adherence in such a way that the outcome of glaucoma treatment is improved. There is limited evidence to recommend a particular intervention to improve adherence. Patient education has regularly been identified as an intervention to improve adherence.⁷⁻¹⁰

Many glaucoma patients lack knowledge about essential elements of the disease or its treatment, specifically about certain risk factors, rate of progression without treatment and side effects of glaucoma therapy.¹¹ Patients

had a high need for information, especially concerning new developments in glaucoma and its treatment and concerning their own state of glaucoma.¹¹ The ophthalmologist is the preferred provider of information, particularly about the state of the glaucoma of the individual patient.¹¹

In addition, better provision of information to patients in lower socioeconomic groups about specific items is necessary to reduce the socioeconomic differences in knowledge and need for information about risk factors, pathophysiology and consequences of glaucoma, effects and adverse effects of treatment, public assistance and practical aspects of glaucoma.¹² Moreover, addressing the awareness of family predisposition needs to be done more often to reduce the socioeconomic difference in visual field defect severity at time of diagnosis.¹²

It is important to achieve a general level of knowledge in glaucoma patients, but it is unlikely that improving knowledge beyond the current level of knowledge will greatly improve adherence with glaucoma medication.¹³ Moreover, care should be taken in patients who are well informed since non-adherence is higher in patients who know that glaucoma is a slowly progressive disease.¹³ After the diagnosis of glaucoma is made, a patient should be counselled concerning the disease, its treatment and its functional consequences. The questionnaire developed by us can be used to address the questions patients commonly have.¹¹ The relevance of adherence to the prescribed medication should be stressed. A point can be made that non-adherence leads to progression of the disease.

Adherence-enhancing interventions that focus on reducing forgetfulness and increasing usage of dosing aids may be of more benefit than an intervention based on improvement of knowledge above the current level. Dosing regimens are preferred to be kept simple.

In addition, as also stated in the current EGS Guidelines, the patient should be instructed how to apply the drops correctly.² Patients need these instructions, even time after their diagnosis. The partner or home nurse can be asked to apply the drops if a patient can not apply the drops oneself. Moreover, hints reminders can be helpful to connect the application of eye drops to daily routine activities since forgetfulness is a common cause of non-adherence.

To improve adherence with glaucoma treatment, a combination of educational, behavioural and affective interventions is recommended.

As mentioned earlier, adherence is an important aspect of glaucoma treatment. However, one should realize that some non-adherent patients will not be able to achieve a sufficient level of adherence in order to stabilize their glaucoma. In these patients, a laser treatment or (minimally invasive) glaucoma surgery can be considered. A laser treatment could even be considered as an initial treatment, thereby possibly eliminating the issue of non-adherence.

The future may also hold other strategies to solve the problem of non-adherence by means of slow release drug depots. This can counter the issue of non-adherence in a more definite way for those in whom non-adherence is really an issue.

I hope these findings and recommendations are helpful in writing a next edition of the EGS Guidelines with updated guidelines on how to identify non-adherent patients, address patient education and improve adherence.

*Yours sincerely,
Juliette Hoevenaars*

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