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Perspective

Interventional glaucoma consensus treatment protocol

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ABSTRACT

Introduction

Topical medications are a common treatment for glaucoma, but a number of caveats limit their long-term utility and sustainability. In recent years, as a wider variety of treatment options has become more widespread for glaucoma – such as laser trabeculoplasty, minimally invasive glaucoma surgery (MIGS), and sustained-release procedural pharmaceuticals – it has become increasingly possible to manage the disease

procedurally and at earlier stages. This evolution in care has been termed ‘interventional glaucoma’ (IG).

Areas covered

The present paper reviews the evidence behind the IG revolution, then turns to a central question: determining the optimal treatment algorithm at each patient stage within the IG paradigm, from ocular hypertension to severe glaucoma. The paper summarizes the consensus opinion of 10 glaucoma experts committed to IG principles and advancing patient care.

Expert opinion

Within this consensus protocol, each glaucoma stage has its own stepwise, logical procession of treatment(s), with rationale behind each step. The resulting framework is intended to be a practical guide or starting point for providers seeking to incorporate IG principles into their practices.

KEYWORDS: Consensus glaucoma interventional SLT MIGS procedure protocol treatment

1. Introduction

A paradigm shift in glaucoma management is yielding meaningful improvements in patient outcomes. With increasing adoption of minimally invasive procedures, safe and effective control of intraocular pressure (IOP) can be achieved without relying on topical medications as first-line therapy. Substantial evidence suggests that proactive interventional approaches may enable more continuous 24-hour IOP control, improved compliance, delayed visual field progression, revitalization of the natural outflow pathway, and reduced need for more invasive procedures. Such interventions can include selective laser trabeculoplasty (SLT), as supported by the findings of the Laser in

surgery (MIGS) with or without cataract surgery; and/or procedural pharmaceuticals (e.g., sustained-release drug implants).

This shift toward earlier, more proactive interventions – referred to as "interventional glaucoma" (IG) - is supported by a broad evidence base demonstrating the advantages of procedural treatment over topical medical treatment [3–10]. An interventional procedural approach aims to avoid the limitations of topical medications such as IOP fluctuations [11–13], visual field deterioration [1,14–18], local and systemic side effects [19–34], tissue deterioration impacting future surgery [25,26,35,36], non-adherence with resultant glaucomatous progression [37–44], emotional ramifications such as depression and loss of confidence [45–47], and diminished quality of life due to dependence on daily medication [3–8,48–52]. Another limitation of topical medication therapy is the fact that it does not necessarily prevent vision loss. This was demonstrated in a longitudinal U.S. study showing that despite being treated with topical medications, 13.5% of eyes developed blindness in at least one eye over 20 years [53]; and in a Swedish study showing that average visual field progression was -0.80 dB/year, with 5.6% of patients experiencing 2.5 dB or more of visual field loss per year, despite receiving eyedrop-based treatment [54].

Given the potential advantages of an IG treatment approach, the key next question is: what is the optimal IG protocol for glaucoma management? In this manuscript, we will present a consensus opinion on the preferred treatment protocol for patients at each stage of disease, from ocular hypertension to severe glaucoma. This consensus has been reached by the Interventional Glaucoma Working Group, a collection of 10 ophthalmologists who are committed to IG principles and optimizing patient care (Table 1). This consensus is a snapshot in time, reflecting the treatment landscape of late-2024, and may be subject to adjustments as new technologies and evidence emerge.

Table 1. Interventional glaucoma working group*,**.

The primary goal of developing a consensus protocol is to deliver care that maximizes safety and quality of life for patients without compromising efficacy. The aim of the manuscript is threefold: (1) to document a preferred treatment protocol for ocular hypertension and all stages of open angle glaucoma (mild, moderate, severe); (2) to present a consensus of expert opinions of glaucoma specialists committed to IG practice patterns; and (3) to educate our community of physicians, our patients, our staff, and referring optometrists about the rationale behind IG as the preferred path for optimizing patient outcomes.

A glaucoma patient's treatment journey is lifelong, requiring continuous management to prevent progression and preserve vision. Treatment is not a "one size fits all" solution, but rather an individualized approach as different definitions of success may be relevant at various stages of the disease [55,56]. Given the progressive nature of the disease, it is likely that a staged approach with multiple interventions and adjustments will be needed [57]. When deciding the appropriate treatment for a given patient, both benefits and risks should be considered. For example, risks of intraocular surgical interventions may include IOP elevations, hyphema, infection, or intraocular inflammation; while risks of topical medications may include local and systemic side effects (including fatalities), ocular surface disease, IOP fluctuations, and progression of visual field loss. No one treatment is a panacea, and none are without risk. A patient's stage of glaucoma, rate of progression documented by perimetry or optic nerve imaging, comorbidities, and baseline IOP will fundamentally shape which treatment's benefits and risks are warranted [58,59].

The overall process to determine a consensus protocol proceeded as follows. Prior to engaging in the group discussion, each doctor submitted his/her independent protocols for ocular hypertension, mild glaucoma, moderate glaucoma, and severe glaucoma. If all doctors agreed upon a given step for a given severity level, then that step was placed on a whiteboard. For the remaining steps (i.e. ones where unanimous consensus wasn't immediately reached), each step was debated and iterative revisions of the protocol

opinions were sought and submitted at every step of every severity level. Ultimately unanimous consensus was achieved for all steps.

The topics of group discussion proceeded as follows. The first subject of discussion was the selection of the characteristics upon which to base the categorization of treatments from the patient or provider perspective. As summarized in Table 2, these four practical characteristics included: (1) the pre-procedure experience (e.g., pre-procedure eye drops or medication changes, obtaining medical clearance); (2) the procedure experience (e.g., perioperative examinations, procedure duration, type of anesthesia used); (3) the post-procedure experience (e.g., number and intensity of appointments, need for revision procedures); and (4) the impact on a patient's ability to have other procedures in the future (e.g., level of tissue use or destruction, presence of chronic inflammation, regenerative capacity of affected tissue). This practical, patient-centric categorization is fundamentally different from schemas based on outflow pathway (e.g. trabecular or uveoscleral) or mechanism of action (e.g. aqueous suppression, outflow increase).

Table 2. Characteristics used to determine treatment categories, with description of each characteristic.

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The second subject of discussion was to use these four characteristics to determine treatment categories. For example, if two procedures entailed the same pre-procedure experience, procedure experience, post-procedure experience, and impact on ability to undergo future procedures, then they would be placed in the same treatment category. This yielded the following categories: laser procedures [including selective laser trabeculoplasty (SLT), micropulse laser trabeculoplasty (MLT), direct SLT (DSLT)], procedural pharmaceuticals [including travoprost intracameral implant (iDose TR), bimatoprost intracameral implant (Durysta)], tissue-sparing procedures (which leave

tissue-sparing procedures (including goniotomy, trabeculotomy, whose tissue changes are not reversible), filtering surgery (including trabeculectomy, tube shunts, and XEN gel stent), and maximum tolerated medical therapy (MTMT). Maximum tolerated medical therapy was defined as ≥4 classes of topical IOP-lowering medications, or fewer in cases of intolerance or contraindications. Examples of procedures in each of these categories are given in Table 3.

Table 3. Treatment categories and examples.

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Third, after determining the treatment categories, the focus turned to their *ordering* in each disease stage, as the correct sequence is crucial for optimizing outcomes and preventing or slowing progression while balancing the risks. In determining this order, the authors operated with three base assumptions: first, that patients in each stage of the protocol (ocular hypertension, mild, moderate, severe) were previously undiagnosed and untreated and had no other significant ocular comorbidities; second, that a single intervention was made at a time, though there are situations where combining multiple interventions (such as a procedural pharmaceutical with MIGS) is appropriate; and third, that glaucoma drops were always available as a bridge or supplemental therapy. Severity categories followed the definitions of the Academy of Ophthalmology, as outlined in the AAO Preferred Practice Patterns [60]. These severity categories were as follows: mild, no visual field changes; moderate,- any visual field change in one hemifield outside of 5 degrees of fixation; and severe, any visual field change in two hemifields or within 5 degrees of fixation. Patients' disease stage and ocular characteristics fundamentally shaped which categories made sense at which time points [55–59]. Within each severity (ocular hypertension, mild, moderate, severe), treatments were prioritized in a stepwise manner, considering the next most suitable treatment if the preferred option were not available or had been previously performed. If a given patient progressed to a more

he/she should be switched to that respective treatment protocol. In addition to disease severity, the following other characteristics were taken into account when determining treatment progression: lens status (phakic/pseudophakic), disease state (controlled/uncontrolled), number of topical eye drops, prior treatment history, angle anatomy (including presence/absence of pseudoexfoliation), ocular surface disease, age/life expectancy, transportation issues, physical or cognitive impairment, insurance limitations, and motivation/adherence. Accounting for these parameters did not fundamentally change the ordering of treatments at any severity stage within the protocol. Figures 1–4 summarize the consensus treatment protocols for ocular hypertension, mild glaucoma, moderate glaucoma, and severe glaucoma – outlining the specific approach for each stage (Figures 1–4). Figure 5 provides a consolidated overview of all four protocols for easy comparison (Figure 5).

Figure 1. Treatment Protocol for Ocular Hypertension.

Examples of Treatment Options in Each Category:
Lasers: e.g., selective laser trabeculoplasty (SLT), micropulse laser trabeculoplasty (MLT)
Procedural Pharmaceuticals: e.g., travoprost intracameral implant (iDose TR), bimatoprost intracameral implant (Durysta)
Tissue-Sparing MIGS: trabecular micro-bypass, canaloplasty
Abbreviations:
MIGS: minimally invasive glaucoma surgery/micro-invasive glaucoma surgery; MTMT: maximum-tolerated medical therapy
Note:
- Protocol assumes a previously undiagnosed and untreated patient with no other significant ocular comorbidities.
- Topical medications are available throughout as bridge and supplemental therapy.

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Figure 2. Treatment Protocol for Mild Glaucoma.

Examples of Treatment Options in Each Category:

Lasers: e.g., selective laser trabeculoplasty (SLT), micropulse laser trabeculoplasty (MLT)

Procedural Pharmaceuticals: e.g., travoprost intracameral implant (iDose TR), bimatoprost intracameral implant (Durysta)

Tissue-Sparing MIGS: e.g., trabecular micro-bypass, canaloplasty

Non-Tissue-Sparing MIGS Procedures: e.g., goniotomy

Abbreviations:

MIGS: minimally invasive glaucoma surgery/micro-invasive glaucoma surgery; MTMT: maximum-tolerated medical therapy

Note:

- Protocol assumes a previously undiagnosed and untreated patient with no other significant ocular comorbidities.
- Topical medications are available throughout as bridge and supplemental therapy.

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Figure 3. Treatment Protocol for Moderate Glaucoma.

Examples of Treatment Options in Each Category:

Lasers: e.g., selective laser trabeculoplasty (SLT), micropulse laser trabeculoplasty (MLT)

Procedural Pharmaceuticals: e.g., travoprost intracameral implant (iDose TR), bimatoprost intracameral implant (Durysta)

Tissue-Sparing MIGS: e.g., trabecular micro-bypass, canaloplasty

Non-Tissue-Sparing MIGS Procedures: e.g., goniotomy

Filtering surgery: e.g., trabeculectomy, tube shunt implantation, XEN Gel Stent

Abbreviations:

MIGS: minimally invasive glaucoma surgery/micro-invasive glaucoma surgery; MTMT: maximum-tolerated medical therapy

- Protocol assumes a previously undiagnosed and untreated patient with no other significant ocular comorbidities.
- Topical medications are available throughout as bridge and supplemental therapy.

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Figure 4. Treatment Protocol for Severe Glaucoma*.

*In certain severe cases according to the surgeons' discretion, interventions may be completed "out of sequence" compared to the above diagram.

Examples of Treatment Options in Each Category:

Procedural Pharmaceuticals: e.g., travoprost intracameral implant (iDose TR), bimatoprost intracameral implant (Durysta)

Tissue-Sparing MIGS: e.g., trabecular micro-bypass, canaloplasty

Non-Tissue-Sparing MIGS Procedures: e.g., goniotomy

Filtering Surgery: e.g., trabeculectomy, tube shunt implantation, XEN Gel Stent

Abbreviations:

MIGS: minimally invasive glaucoma surgery/micro-invasive glaucoma surgery; MTMT: maximum-tolerated medical therapy

Note:

- Protocol assumes a previously undiagnosed and untreated patient with no other significant ocular comorbidities.
- Topical medications and/or SLT are available throughout as bridge and supplemental therapy.

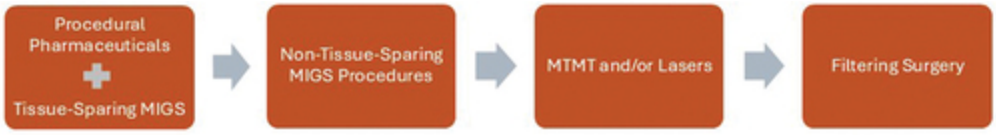

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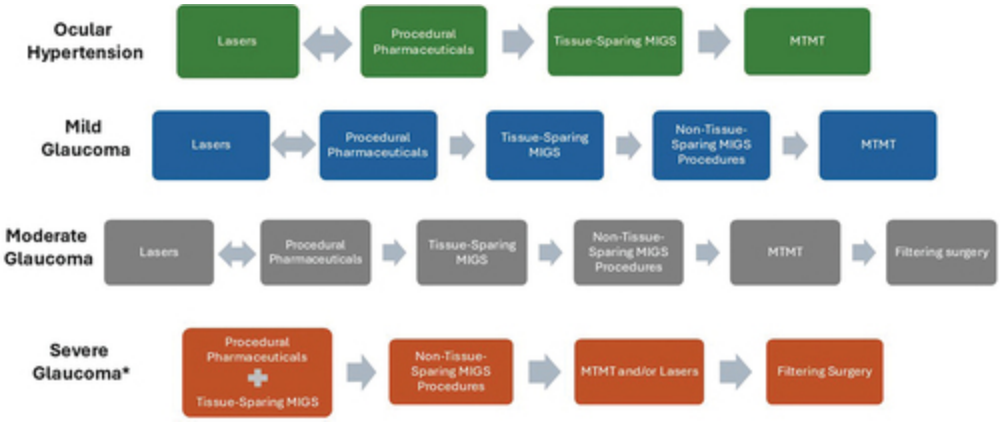
Figure 5. Treatment Protocols for Ocular Hypertension, Mild Glaucoma, Moderate

Footnotes: *In certain severe cases according to the surgeons' discretion, interventions may be completed "out of sequence" compared to the above diagram. Examples of Treatment Options in Each Category: Lasers: e.g., selective laser trabeculoplasty (SLT), micropulse laser trabeculoplasty (MLT) Procedural Pharmaceuticals: e.g., travoprost intracameral implant (iDose TR), bimatoprost intracameral implant (Durysta) Tissue-Sparing MIGS: e.g., trabecular micro-bypass, canaloplasty Non-Tissue-Sparing MIGS Procedures: e.g., goniotomy Filtering Surgery: e.g., trabeculectomy, tube shunt implantation, XEN Gel Stent Abbreviations MIGS: minimally invasive glaucoma surgery/micro-invasive glaucoma surgery; MTMT: maximum-tolerated medical therapy Note: - Protocol assumes a previously undiagnosed and untreated patient with no other significant ocular comorbidities. - Topical medications and/or SLT are available throughout as bridge and supplemental therapy.



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2. Ocular hypertension

Patients with ocular hypertension (OHTN) exhibit elevated IOP without signs of glaucomatous optic nerve damage or associated visual field defects. Studies such as the Ocular Hypertension Treatment Study (OHTS) have established that a percentage of patients with OHTN progress to primary open-angle glaucoma (POAG), and that IOP reduction significantly decreases this risk [61]. The OHTS also identified predictive

corneal thickness [62]. Historically, management involved stratifying patients by their individual risk factors to estimate the probability of developing glaucoma over time, then initiating topical medication treatment in patients with identified risk factors. However, advancements in treatment modalities now offer a broader range of efficacious interventions that do not necessarily require long-term topical therapy and thus could be appealing options in earlier stages of the disease, including in OHTN. Furthermore, IOP reduction may not need to be as dramatic as in eyes that have glaucomatous disease; for example, mean IOP reduction was 22.5% in the OHTS [61].

Given that patients with OHTN are generally early in their overall treatment journey, priority is placed upon maximizing the potential for other procedures in the future. Another important consideration is minimizing pre-procedure, procedure-day, and post-procedure inconveniences or side effects. With these principles in mind, the following stepwise treatment progression is desirable: Lasers → Procedural Pharmaceuticals → Tissue-Sparing MIGS → MTMT (Figure 1). Alternatively, there are instances where the physician may choose to start with a procedural pharmaceutical instead of laser. Importantly, as the disease is in its earliest stage of presentation, non-tissue-sparing procedures and filtering surgeries are not warranted in OHTN as the focus is to preserve future options.

2.1. Mild glaucoma

Patients with mild glaucoma have minimal glaucomatous optic nerve damage with evidence of ganglion cell complex (GCC) or retinal nerve fiber layer (RNFL) loss, and no visual field loss [59,63]. For these patients, IOP reduction is more important than in OHTN; therefore, surgeons should have a greater willingness to employ an intervention in order to preserve visual function [64–66]. There is also a modest increase in willingness to experience inconveniences or side effects associated with pre-procedure, procedure-day, or post-procedure care. However, this willingness does not yet warrant the risks of a filtering surgery [67–71]. As a result, the treatment protocol is like that of OHTN, but with the inclusion of non-tissue-sparing procedures as a later step when

limit future treatment options. Thus, for these mild glaucoma patients, the following stepwise treatment progression is recommended: lasers → procedural pharmaceuticals → tissue-sparing MIGS → non-tissue-sparing MIGS → MTMT (Figure 2). As with ocular hypertension, in some cases, physicians may choose to start with a procedural pharmaceutical instead of laser in patients with mild glaucoma.

2.2. Moderate glaucoma

Patients with moderate glaucoma have more prominent glaucomatous optic nerve damage, and visual field loss in one hemifield outside of five degrees of fixation. In moderate glaucoma, IOP reduction (into the 12-15 mmHg range) [72] is more essential, as studies suggest that visual field progression can be limited when IOP is maintained below 15 mmHg [72–74]. There is even less hesitation to employ a procedure that may limit future procedural options, or one with inconveniences or side effects associated with pre-procedure, procedure-day, or post-procedure care. Unlike in mild glaucoma, visual field damage in moderate glaucoma is sufficient to warrant the risks of a filtering surgery, if other treatments have otherwise failed. As a result, the treatment protocol is like that of mild glaucoma, but with the inclusion of filtering surgeries if all other therapeutic options have been exhausted. Thus, for these moderate glaucoma patients, the following stepwise treatment progression is most appropriate: lasers → procedural pharmaceuticals → tissue-sparing MIGS → non-tissue-sparing MIGS → MTMT → filtering surgery (Figure 3). As with ocular hypertension and mild glaucoma, in some cases, physicians may choose to start with a procedural pharmaceutical instead of laser in patients with moderate glaucoma.

2.3. Severe glaucoma

Patients with severe glaucoma have advanced glaucomatous optic nerve damage and visual changes, with visual field loss in two hemifields or within five degrees of fixation. Of all stages of glaucoma, severe glaucoma necessitates the most aggressive IOP reduction [75,76], and there is minimal hesitation in employing a procedure that may

severe glaucoma is sufficient to warrant the risks of filtering surgery, if other treatments have otherwise failed. However, in comparison to moderate glaucoma, rapidity of IOP reduction is more crucial to preserve remaining optic nerve fibers. Although preventing vision loss is a central goal of treating all stages of glaucoma, in severe glaucoma, there is less reserve, making aggressive intervention more critical. Complications or inconveniences during the pre-procedure, procedure-day, or post-procedure period may be more readily tolerated. Therefore, a single-step sequential progression of SLT followed by procedural pharmaceutical followed by tissue-sparing MIGS, all interspersed with periods of watchful waiting, is not desirable. As a result, the treatment protocol is like that of moderate glaucoma, with two important changes: it excludes SLT as a first-step treatment option due to the need for a more rapid and aggressive IOP reduction; and it calls for ***both*** a procedural pharmaceutical and a tissue-sparing MIGS, followed immediately by the next step (non-tissue-sparing MIGS) if IOP is not controlled. Thus, for these severe glaucoma patients, the following treatment progression is most appropriate: procedural pharmaceutical AND tissue-sparing MIGS → non-tissue-sparing MIGS → MTMT and/or SLT → filtering surgery (Figure 4). One important caveat to note is that in cases of severe glaucoma, prompt and substantial reduction of intraocular pressure (IOP) is imperative, occasionally necessitating modifications to the aforementioned treatment algorithm. As such, the urgency for rapid IOP reduction may demand more aggressive strategies, such as proceeding directly to incisional surgery, particularly when a swift and substantial decrease in IOP is essential to prevent irreversible optic nerve damage. Furthermore, there may be instances where revisiting less invasive interventions, such as re-engaging with MIGS, could provide therapeutic benefit at lower risk. The treatment algorithm outlined in this paper is intended to establish a consistent, standardized framework for managing patients with severe glaucoma. Nevertheless, some patients may present unique clinical complexities requiring individualized adjustments to optimize outcomes and ensure the highest quality of care.

Glaucoma treatment is evolving in treatment algorithms as well as mindset. Procedural interventions are increasingly utilized, while the limitations of topical medications as first-line therapy are becoming more recognized. This paradigm shift, termed interventional glaucoma, calls for an early and more proactive approach, decreased reliance on topical medications, and limited dependency on patient adherence. Conceptually, this evolution makes logical sense, and it is supported by a strong base of empirical evidence. However, the question then becomes, what is the recommended alternative treatment protocol? Glaucoma is a spectrum, with no one treatment being perfect at every stage of the disease. Thus, a treatment protocol that considers different disease states is needed.

The present article has summarized the IG Working Group's opinion of a viable treatment protocol for ocular hypertension, mild glaucoma, moderate glaucoma, and severe glaucoma. By focusing on the patient experience and employing earlier minimally invasive surgical, laser, or procedural pharmaceutical treatments instead of prolonged topical medications, this interventional glaucoma protocol aims to take the burden of topical medications off the patient. It also aims to preserve patients' vision itself, which is achieved more readily with an interventional glaucoma strategy than with sustained topical medications [1,14–16]. Indeed, the traditional topical-medications-first treatment paradigm can be associated with progressive visual loss and even blindness while under the care of ophthalmologists [53].

In addition to considering the clinical impact of an interventional glaucoma treatment framework, it is also relevant to assess its realistic cost-effectiveness. Although there may be immediate up-front costs of procedural intervention, there also may be cost benefits of diagnosing and treating earlier – benefits which may extend to patients, providers, clinics, and health systems. There is robust evidence on the cost-effectiveness of intervening with MIGS [77–79], or with SLT [1,80,81]. In contrast, higher disease severity (potentially due to not intervening soon enough) is known to be associated with higher direct costs and ophthalmology-related resource usage, including in medication

The interventional glaucoma mindset aims to minimize the negative impact of both the glaucoma disease and glaucoma treatment, through sustained reduction of IOP and medication burden, respectively. With this patient-centric perspective and minimally invasive treatment options, we can transform the traditional glaucoma treatment paradigm to significantly enhance patient outcomes.

4. Expert opinion

As discussed in this article, the glaucoma treatment paradigm is evolving: changing from a traditional topical medications-first approach to one employing more proactive procedural intervention(s). This IG progression leverages a broader treatment armamentarium which can include, for example, laser trabeculoplasty, MIGS procedures, and procedural pharmaceuticals – instead of relying on only the traditional mainstays of topical medications and filtering surgery. As with any change, this evolution brings both promise and challenges. There is promise, supported by robust evidence, that patients' vision can be preserved more effectively, consistently, reliably, and comfortably with procedural interventions than with topical medications. However, the challenges associated with such change may include alterations to clinic flow, hesitancy of physicians and staff, limited time and/or training, and desire to maintain existing treatment patterns.

A key area of opportunity – and need for improvement - involves the need for a clear treatment protocol that providers can follow once they understand the benefits of an IG treatment methodology and want to adopt it as their guiding treatment strategy. The present manuscript aims to provide such a protocol. The protocol consists of four distinct treatment paths for ocular hypertension, mild glaucoma, moderate glaucoma, and severe glaucoma, respectively. These paths reflect the state of clinical care as of 2024; they were determined by 10 glaucoma experts committed to advancing patient care in a proactive, interventional, evidence-based manner.

Further research in this area has the potential to discern changes in treatment patterns as more providers adopt an IG mindset, and the impact of these changes on patient care. Research also could assess the stability of structural and functional parameters such as visual field outcomes and retinal nerve fiber layer thickness; the degree of IOP fluctuation with procedural interventions versus topical medications; and the effect of IG treatment patterns on patient quality of life. The natural endpoint of such research is to inform providers of the practical and clinical impacts of adopting IG care into their practices, and, if favorable, to motivate other providers to join them.

In addition, in the future, providers may modify the preferred IG treatment algorithm based on the findings of research studies like the ones mentioned above. Thus, the future of such study lies in both continually refining the preferred IG treatment protocol and measuring the effects of its implementation.

Over the next 5 to 10 years, we believe the standard of care should have progressed beyond relying on topical medication as the first (and often only) treatment a glaucoma patient receives. We will act earlier in diagnosing, monitoring for progression, and intervening; and we will base our decisions upon both new and existing evidence. Our treatment armamentarium will include an entire spectrum of interventions, which will be ordered in a logical manner based on the disease stage being treated, from ocular hypertension to severe glaucoma. As a result, patients will benefit, health systems will bear a lower overall treatment burden, and increasing numbers of providers and patients will adopt an interventional approach to glaucoma treatment.

Article highlights

- The glaucoma treatment paradigm is evolving from a topical medications-first approach to a more proactive procedural approach, a shift that has been termed “interventional glaucoma” (IG).

- The resultant IG treatment protocol should have different paths for each stage of glaucoma, from ocular hypertension to severe disease.
- Within each disease stage, the treatment path has a rationale based on practical patient-centric factors: pre-procedure experience; procedure-day experience; post-procedure experience; and impact on ability to have other procedures in the future.
- Each treatment path is also determined by the degree and rapidity of intraocular pressure reduction needed for a given disease stage.
- With these rationale, treatment categories can be placed in order for each disease stage, including lasers, tissue-sparing minimally invasive glaucoma surgery (MIGS), non-tissue-sparing MIGS, procedural pharmaceuticals, filtering surgery, and topical medications.
- The resultant treatment paths comprise a practical framework, or protocol, intended to give providers a starting point as they seek to incorporate IG principles to improve patient care.

Declaration of interest

CM Funke has served as consultant and/or speaker for AbbVie, Alcon, Glaukos, Thea, Slight Sciences, Dompe, New World Medical, Nova Eye Medical and Elios. CM Funke also serves as a marketing board member for Elios and has received research grants and/or funding from Alcon and Sight Sciences. D Ristvedt has served as a consultant and or speaker for AbbVie, Glaukos, Sight Science, Johnson & Johnson, BVI Medical, Elios, Osheru and Rx Sight. A Yadgarov has served as a consultant for Glaukos, Sight Sciences, and Elios. A Yadgarov also serves on a speaker's bureau for AbbVie, and Bausch + Lomb. J M Micheletti has also served as a consultant and/or speaker for Alcon, Allergan (AbbVie), Avellino, Bausch & Lomb, BVI Medical, Centricity Vision, Diamatrix, ELios,

STAAR, Tarsus, Visus Therapeutics and Zeiss. JM Micheletti has also served as a researcher for Alcon, Allergan, Johnson & Johnson VIsion, Lenstec and STAAR in addition to have a patent with Diamatrix.

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