Australian Government

Department of Health

Application Form

(New and Amended Requests for Public Funding)

(Version 2.5)

This application form is to be completed for new and amended requests for public funding (including but not limited to the Medicare Benefits Schedule (MBS)). It describes the detailed information that the Australian Government Department of Health requires in order to determine whether a proposed medical service is suitable.

Please use this template, along with the associated Application Form Guidelines to prepare your application. Please complete all questions that are applicable to the proposed service, providing relevant information only. Applications not completed in full will not be accepted.

The application form will be disseminated to professional bodies / organisations and consumer organisations that have will be identified in Part 5, and any additional groups that the Department deem should be consulted with. The application form, with relevant material can be redacted if requested by the Applicant.

Should you require any further assistance, departmental staff are available through the contact numbers and email below to discuss the application form, or any other component of the Medical Services Advisory Committee process.

Phone: +61 2 6289 7550
Fax: +61 2 6289 5540
Email: hta@health.gov.au
Website: www.msac.gov.au

PART 1 – APPLICANT DETAILS

1. Applicant details (primary and alternative contacts)

Corporation / partnership details (where relevant):

Glaukos Australia Pty Ltd and Ivantis Incorporated will act as co-Sponsors for an application to the Medical Services Advisory Committee (MSAC), seeking a list on the Medicare Benefits Scheme (MBS) for the implantation of a trabecular bypass micro-invasive glaucoma surgery (MIGS) device in patients with primary open-angle glaucoma (POAG). Glaukos manufacture two MIGS devices (iStent inject trabecular micro bypass system, ARTG: 250914; iStent trabecular micro bypass stent system, ARTG: 219246), and Ivantis one device (Hydrus Microstent, ARTG: 212194)

Corporation name:

Glaukos Australia Pty Ltd

ABN: 68 607 895 885

Business trading name: Glaukos Australia Pty Ltd

Primary contact name: Glenn Fawcett

Primary contact numbers

Business: Glenn Fawcett, General Manager, Glaukos Australia

Mobile: [redacted]

Email: [redacted]

Alternative contact name: Dominic Tilden and Matthew Needham

Alternative contact numbers

Business: THEMA Consulting Pty Ltd

Phone: [redacted]

Email: [redacted]

2. (a) Are you a consultant acting on behalf of an Applicant?

☐ Yes
☒ No

(b) If yes, what is the Applicant(s) name that you are acting on behalf of?

3. (a) Are you a lobbyist acting on behalf of an Applicant?

☐ Yes
☒ No

(b) If yes, are you listed on the Register of Lobbyists?

☐ Yes
☐ No

PART 2 – INFORMATION ABOUT THE PROPOSED MEDICAL SERVICE

4. Application title

MSAC Application 1483 – Trabecular bypass micro-invasive glaucoma surgery (MIGS) device implantation in patients with mild-to-moderate primary open-angle glaucoma

5. Provide a succinct description of the medical condition relevant to the proposed service

Glaucoma is a chronic degenerative optic neuropathy in which the neuro-retinal rim of the optic nerve becomes progressively thinner, caused by an acquired loss of retinal ganglion cell axons and atrophy of the optic nerve. The lens and cornea of the eye both lack direct blood supply. Therefore, these anterior structures are nourished by a separate circulatory system. The aqueous humor, produced by the ciliary body, circulates throughout the anterior chamber and drains through the trabecular meshwork in the iridocorneal angle. Its primary role is to maintain intraocular pressure (IOP), and provide nutrients to the structures of the anterior and posterior chambers of the eye.

In open-angle glaucoma (OAG), the iridocorneal angle is unobstructed but aqueous outflow is diminished, leading to an elevation of intraocular pressure. Patients with glaucoma typically lose peripheral vision, and may suffer complete vison loss if not treated.

6. Provide a succinct description of the proposed medical service

MIGS devices describe a variety of implanted, minimally invasive ocular stents and scaffolds which, when placed in specific anatomical positions within the anterior structures of the eye, aim to improve aqueous humor outflow, and reduce intra-ocular pressure. Three devices are relevant to the service described in this application. The proposed service describes the delivery of a trabecular bypass MIGS stent – pre-loaded on an inserter specific to each device – into the trabecular meshwork of the eye. The stent, or stents, are implanted ab interno by gonioscopy, via a corneal incision. The exact positioning within the anterior structures (trabecular meshwork and Schlemm canal) are specific to each device. However, the complexity and resource intensity of the implantation procedure is comparable regardless of trabecular bypass MIGS device implanted (iStent or Hydrus).

The iStent® trabecular micro-bypass stent and iStent inject system are heparin-coated trabecular bypass MIGS devices used to treat patients with mild-to-moderate OAG. The device is placed ab interno, via a corneal incision, through the trabecular meshwork, creating a conduit for aqueous humor passage from the anterior chamber to the Schlemm canal.

The Hydrus Microstent serves as an intracanalicular scaffold once implanted into Schlemm's canal. The delivery device makes a small incision through the trabecular meshwork and the inner wall of the Schlemm canal. The microstent is then advanced along the canal, with 1-2mm of stent remaining in the anterior chamber.

7. (a) Is this a request for MBS funding?

☒ Yes
☐ No

(b) If yes, is the medical service(s) proposed to be covered under an existing MBS item number(s) or is a new MBS item(s) being sought altogether?

☐ Amendment to existing MBS item(s)
☒ New MBS item(s)

(c) If an amendment to an existing item(s) is being sought, please list the relevant MBS item number(s) that are to be amended to include the proposed medical service:

Not applicable

(d) If an amendment to an existing item(s) is being sought, what is the nature of the amendment(s)?

Not applicable

i. ☐ An amendment to the way the service is clinically delivered under the existing item(s)
ii. ☐ An amendment to the patient population under the existing item(s)
iii. ☐ An amendment to the schedule fee of the existing item(s)
iv. ☐ An amendment to the time and complexity of an existing item(s)
v. ☐ Access to an existing item(s) by a different health practitioner group
vi. ☐ Minor amendments to the item descriptor that does not affect how the service is delivered
vii. ☐ An amendment to an existing specific single consultation item
viii. ☐ An amendment to an existing global consultation item(s)
ix. ☐ Other (please describe below):

(e) If a new item(s) is being requested, what is the nature of the change to the MBS being sought?

i. ☐ A new item which also seeks to allow access to the MBS for a specific health practitioner group
ii. ☒ A new item that is proposing a way of clinically delivering a service that is new to the MBS (in terms of new technology and / or population)

Trabecular bypass MIGS device implantation has been previously funded in Australia under the MBS item code 42758 (goniotomy). An MSAC review of this item determined that the current criteria for claiming item 42758 does not extend to the implantation of trabecular bypass MIGS devices. An amendment to the current MBS item for goniotomy, effective 1 May 2017, will explicitly exclude implantation of MIGS device being claimed under this service. Thus, the medical service is not novel to Australian clinical practice; but its safety, effectiveness and cost-effectiveness in the proposed patient population have not previously been evaluated by MSAC, nor is there an MBS item (current or former) that specifically describes the proposed service. In this way, the service and therapeutic intervention it describes is new to the MSAC.

Glaukos and Ivanits are subsequently seeking a new MBS item for the delivery of trabecular bypass MIGS devices in the nominated patient population.

iii. ☐ A new item for a specific single consultation item
iv. ☐ A new item for a global consultation item(s)

(f) Is the proposed service seeking public funding other than the MBS?

☒ Yes
☐ No

(g) If yes, please advise:

At the time of submitting this Application form (3 March 2017), the three devices dependent on the proposed MBS service are listed on the Prostheses List (Billing codes: iStent trabecular micro-bypass stent system RQ072, iStent inject system RQ075, Hydrus microstent OQ002). Should these products be removed from the Prostheses list as a result of the amendment to MBS item 42758 on 1 May 2017, a Prostheses List application for each of the MIGS devices dependent on this application will be re-submitted in parallel.

8. What is the type of service:

☒ Therapeutic medical service
☐ Investigative medical service
☐ Single consultation medical service
☐ Global consultation medical service
☐ Allied health service
☐ Co-dependent technology
☐ Hybrid health technology

9. For investigative services, advise the specific purpose of performing the service *(which could be one or more of the following)*:

Not applicable

i. ☐ To be used as a screening tool in asymptomatic populations
ii. ☐ Assists in establishing a diagnosis in symptomatic patients
iii. ☐ Provides information about prognosis
iv. ☐ Identifies a patient as suitable for therapy by predicting a variation in the effect of the therapy
v. ☐ Monitors a patient over time to assess treatment response and guide subsequent treatment decisions
vi. ☐ Is for genetic testing for heritable mutations in clinically affected individuals and, when also appropriate, in family members of those individuals who test positive for one or more relevant mutations (and thus for which the Clinical Utility Card proforma might apply)

10. Does your service rely on another medical product to achieve or to enhance its intended effect?

☐ Pharmaceutical / Biological
☒ Prosthesis or device
☐ No

11. (a) If the proposed service has a pharmaceutical component to it, is it already covered under an existing Pharmaceutical Benefits Scheme (PBS) listing?

Not applicable

☐ Yes
☐ No

(b) If yes, please list the relevant PBS item code(s):

(c) If no, is an application (submission) in the process of being considered by the Pharmaceutical Benefits Advisory Committee (PBAC)?

☐ Yes (please provide PBAC submission item number below)
☐ No

(d) If you are seeking both MBS and PBS listing, what is the trade name and generic name of the pharmaceutical?

Trade name:
Generic name:

12. (a) If the proposed service is dependent on the use of a prosthesis, is it already included on the Prostheses List?

☒ Yes
☐ No

As of 3 March 2017, the three trabecular bypass MIGS devices dependent on the proposed MBS service are listed on the Prostheses List. These items may be subject to removal from the Prostheses List should their primary MBS item code (42758) be amended to explicitly exclude the implantation of MIGS devices.

If this were to occur, a Prostheses List application for each MIGS device dependent on this MSAC application will be submitted in parallel.

(b) If yes, please provide the following information (where relevant):

Billing code(s):
iStent trabecular micro-bypass stent, Billing code: RQ072
iStent inject system, Billing Code: RQ075
Hydrus Microstent, Billing code: OQ002

Trade name of prostheses:
iStent trabecular micro-bypass stent
iStent inject system
Hydrus Microstent

Clinical name of prostheses: As above

Other device components delivered as part of the service: Not applicable

(c) If no, is an application in the process of being considered by a Clinical Advisory Group or the Prostheses List Advisory Committee (PLAC)?

Not applicable

☐ Yes
☐ No

(d) Are there any other sponsor(s) and / or manufacturer(s) that have a similar prosthesis or device component in the Australian market place which this application is relevant to?

☒ Yes
☐ No

(e) If yes, please provide the name(s) of the sponsor(s) and / or manufacturer(s):

As discussed, the proposed MBS item would be relevant to two manufacturers of trabecular bypass MIGS devices in Australia, Glaukos (iStent devices), and Ivantis (Hydrus device). This application form is lodged as a joint submission between these two Sponsors.

13. Please identify any single and / or multi-use consumables delivered as part of the service?

Single use consumables:
An injector system, pre-loaded with the MIGS device is provided and included in the total cost of the MIGS device system. The cost of the injector and the micro-bypass stent prosthesis are not included as part of the MBS service
Multi-use consumables: None

PART 3 – INFORMATION ABOUT REGULATORY REQUIREMENTS

14. (a) If the proposed medical service involves the use of a medical device, in-vitro diagnostic test, pharmaceutical product, radioactive tracer or any other type of therapeutic good, please provide the following details:

iStent Inject Trabecular Micro Bypass System (Model number G2 M IS AS)
Type of therapeutic good: Medical device – single device product
Manufacturer's name: Glaukos
Sponsor's name: RQSolutions Medical Devices Distribution Support

iStent Trabecular Micro Bypass Stent System – Drain, internal , eye
Type of therapeutic good: Medical device – single device product
Manufacturer's name: Glaukos
Sponsor's name: RQSolutions Medical Devices Distribution Support

RQSolutions is the nominated TGA sponsor and holds the registration on behalf of Glaukos Corporation, with a wholly owned subsidiary Glaukos Australia Pty Ltd conducting business in Australia.

Hydrus Microstent
Type of therapeutic good: Medical device – single device product
Manufacturer's name: Ivantis Inc
Sponsor's name: Opthalmico Pty Ltd.

Is the medical device classified by the TGA as either a Class III or Active Implantable Medical Device (AIMD) against the TGA regulatory scheme for devices?

☒ Class III

iStent Trabecular Micro Bypass Stent System and the iStent Inject System are classified as Class III devices. The Hydrus Microstent is classified as Class IIb

☐ AIMD
☐ N/A

15. (a) Is the therapeutic good to be used in the service exempt from the regulatory requirements of the *Therapeutic Goods Act 1989*?

☐ Yes (If yes, please provide supporting documentation as an attachment to this application form)
☒ No

(b) If no, has it been listed or registered or included in the Australian Register of Therapeutic Goods (ARTG) by the Therapeutic Goods Administration (TGA)?

☒ Yes (if yes, please provide details below)
☐ No
iStent Inject Trabecular Micro Bypass System
ARTG listing, registration or inclusion number: 250914
TGA approved indication(s), if applicable: The iStent Inject Trabecular Micro Bypass System is indicated for use in conjunction with cataract surgery for the reduction of IOP in subjects with mild to moderate open angle glaucoma currently treated with ocular hypotensive medication
TGA approved purpose(s), if applicable: As above

iStent Trabecular Micro Bypass Stent System
ARTG listing, registration or inclusion number: 219246

TGA approved indication(s), if applicable: The iStent Trabecular Micro-Bypass Stent is indicated for use in conjunction with cataract surgery for the reduction of IOP in subjects with mild to moderate open angle glaucoma currently treated with ocular hypotensive medication
TGA approved purpose(s), if applicable: As above

Hydrus Microstent
ARTG listing, registration or inclusion number: 212194
TGA approved indication(s), if applicable: The Hydrus Microstent is intended for the reduction of intraocular pressure (IOP) in patients with primary open angle glaucoma (POAG) as a standalone treatment or in conjunction with cataract surgery
TGA approved purpose(s), if applicable: As above

16. If the therapeutic good has not been listed, registered or included in the ARTG, is the therapeutic good in the process of being considered for inclusion by the TGA?

☒ Yes (please provide details below)
☐ No

The iStent inject system and iStent trabecular mirco-bypass stent system are both included in the ARTG. However, Glaukos are in the process of requesting an amendment to the TGA-approved indication for these products. The date of submission and requested amendment to the TGA indication are provided below:

Date of submission to TGA: 7 April 2016
Estimated date by which TGA approval can be expected: [redacted]
TGA Application ID: [redacted]
TGA approved indication(s), if applicable:
[redacted]

iStent inject trabecular micro-bypass system
The iStent inject trabecular micro-bypass system is intended to reduce intraocular pressure in adult patients diagnosed with mild to moderate primary open-angle glaucoma (POAG) currently treated with ocular hypotensive medication. The device can be implanted with or without cataract surgery

TGA approved purpose(s), if applicable: As above

17. If the therapeutic good is not in the process of being considered for listing, registration or inclusion by the TGA, is an application to the TGA being prepared?

☐ Yes (please provide details below)
☐ No

Not applicable

Estimated date of submission to TGA: Insert date of submission here
Proposed indication(s), if applicable: If applicable, insert description of proposed indication(s)
Proposed purpose(s), if applicable: If applicable, insert description of proposed purpose(s) here

PART 4 – SUMMARY OF EVIDENCE

18. **Provide an overview of all key journal articles or research published in the public domain related to the proposed service that is for your application (limiting these to the English language only).** ***Please do not attach full text articles, this is just intended to be a summary.***

Delivery of the proposed MBS service can be broadly divided into two patient populations; those patients in whom a trabecular bypass MIGS device is implanted in conjunction with cataract surgery, and those patients in whom trabecular bypass MIGS device implantation is delivered as a stand-alone procedure. The randomised controlled evidence for these two population is provided separately below.

	Type of study design*	**Title of journal article or research project (including any trial identifier or study lead if relevant)**	**Short description of research (max 50 words)****	**Website link to journal article or research (if available)**	**Date of publication*****
Trabecular bypass MIGS device implantation in conjunction with cataract surgery					
1.	Prospective open-label, randomised controlled trial	Randomized Evaluation of the Trabecular Micro-Bypass Stent with Phacoemulsification in Patients with Glaucoma and Cataract Samuelson TW, Katz LJ, Wells JM et al. NCT00323284	Comparing implantation of iStent in conjunction with cataract surgery versus cataract surgery alone in mild to moderate OAG and IOP ≤ 24 mmHg while taking 1 to 3 ocular hypotensive medications. N = 240	https://www.ncbi.nlm.nih.gov/pubmed/20828829	March 2011
2.	Prospective randomised controlled trial	Cataract surgery with trabecular micro-bypass stent implantation in patients with mild-to-moderate open-angle glaucoma and cataract: Two-year follow-up Craven ER, Katz LJ, Wells JM et al.	To assess the long-term safety and efficacy of a single trabecular micro-bypass stent with concomitant cataract surgery versus cataract surgery alone for mild to moderate open-angle glaucoma N = 239	https://www.ncbi.nlm.nih.gov/pubmed/22814041	August 2012
3.	Prospective randomised controlled trial	Phacoemulsification versus phacoemulsification with micro-bypass stent implantation in primary open-angle glaucoma: Randomized double-masked clinical trial Fea AM	To compare phacoemulsification alone and phacoemulsification with micro-bypass stent implantation in eyes with primary open-angle glaucoma N = 36	https://www.ncbi.nlm.nih.gov/pubmed/20202537	March 2010

	Type of study design*	Title of journal article or research project (including any trial identifier or study lead if relevant)	Short description of research (max 50 words)**	Website link to journal article or research (if available)	Date of publication***
4.	Prospective randomised controlled trial	Micro-Bypass Implantation for Primary Open-Angle Glaucoma Combined with Phacoemulsification: 4-Year Follow-Up Fea AM, Consolandi G, Zola M et al.	To report the long-term follow-up results in patients with cataract and primary open-angle glaucoma (POAG) randomly assigned to cataract surgery combined with micro-bypass stent implantation or phacoemulsification alone.	https://www.hindawi.com/journals/joph/2015/795357	2015 48 months follow-up of Fea 2010 study
5.	Prospective randomised controlled trial	Fluorophotometric Study of the Effect of the Glaukos Trabecular Microbypass Stent on Aqueous Humor Dynamics Fernandez-Barrientos Y, Garcia-Feijoo J, Martinez-de-la-Casa JM et al. NCT00326066	To evaluate the changes in aqueous humor dynamics and the efficacy and safety of the iStent in combination with cataract surgery. N = 33	https://www.ncbi.nlm.nih.gov/pubmed/20207977	July 2010
Trabecular bypass MIGS devices implanted as stand-alone procedures					
6.	Prospective randomised controlled trial	Prospective unmasked randomized evaluation of the iStent inject® versus two ocular hypotensive agents in patients with primary open-angle glaucoma. Fea AM, Belda JI, Rekas M et al.	To compare outcomes of subjects with open-angle glaucoma (OAG) not controlled on one medication who underwent either implantation of two iStent inject® trabecular micro-bypass devices or received medical therapy consisting of a fixed combination of latanoprost/timolol. N = 192	https://www.ncbi.nlm.nih.gov/pubmed/24855336	May 2014
7.	Prospective randomised controlled trial	Prospective, randomized study of one, two, or three trabecular bypass stents in open-angle glaucoma subjects on topical hypotensive medication Katz LJ, Erb C, Carceller A et al. NCT01517477	To assess the safety and efficacy of one, two, or three trabecular microbypass stents in eyes with primary open-angle glaucoma (OAG) not controlled on ocular hypotensive medication. A total of 119 subjects were followed for 18 months postoperatively. N = 119	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4686332/	December 2015

	Type of study design*	Title of journal article or research project (including any trial identifier or study lead if relevant)	Short description of research (max 50 words)**	Website link to journal article or research (if available)	Date of publication***
8.	Prospective randomised controlled trial	Newly Diagnosed Primary Open-Angle Glaucoma Randomized to 2 Trabecular Bypass Stents or Prostaglandin: Outcomes Through 36 Months Vold SD, Voskanyan L, Tetz M et al. NCT01443988	To examine outcomes through 36 months in phakic eyes with newly diagnosed primary open-angle glaucoma (POAG) naïve to therapy randomized to treatment with two trabecular micro-bypass stents or topical prostaglandin. N = 101	https://www.ncbi.nlm.nih.gov/pubmed/27619225	December 2016

** Categorise study design, for example meta-analysis, randomised trials, non-randomised trial or observational study, study of diagnostic accuracy, etc.*

***Provide high level information including population numbers and whether patients are being recruited or in post-recruitment, including providing the trial registration number to allow for tracking purposes.*

**** If the publication is a follow-up to an initial publication, please advise.*

19. Identify yet to be published research that may have results available in the near future that could be relevant in the consideration of your application by MSAC (limiting these to the English language only). *Please do not attach full text articles, this is just intended to be a summary.*

	Type of study design*	Title of research (including any trial identifier if relevant)	Short description of research (max 50 words)**	Website link to research (if available)	Date***
1	Prospective randomised controlled trial	Multicenter Study Using Glaukos® Trabecular Micro-Bypass Stent Model GTS400 Using the G2-M-IS Injector System in Conjunction With Cataract Surgery GC-008 NCT01461291	Evaluate the safety and efficacy of the Glaukos Trabecular Micro-Bypass Stent Model GTS400 using the G2-M-IS injector system in conjunction with cataract surgery vs. cataract surgery only, in subjects with mild to moderate primary open-angle glaucoma. N = 350 Study is ongoing, but no longer recruiting patients	https://clinicaltrials.gov/ct2/show/NCT01461291?term=NCT01461291&rank=1	[redacted]
2	Prospective randomised controlled trial	Safety & Effectiveness Study of the Hydrus Device for Lowering IOP in Glaucoma Patients Undergoing Cataract Surgery CP-11-001 NCT01539239	Eligibility is based on glaucoma severity, eye health, and visual acuity. Use of all topical glaucoma medications will be stopped for a period of "washout" to establish a qualifying medication-free intraocular pressure (IOP) value. Clinical follow up will be scheduled over the course of the 24 month study. At the 1 and 2 year follow up, those patients on ocular hypotensive medications will be instructed to washout, and then have the diurnal IOP evaluation. Annual follow up will occur up to 5 years. The primary effectiveness endpoint is a decrease in diurnal IOP from baseline compared to the 24 months diurnal IOP following medication washout. N = 350 Study is currently recruiting patients	https://clinicaltrials.gov/ct2/show/NCT01539239?term=NCT01539239&rank=1	[redacted]

** Categorise study design, for example meta-analysis, randomised trials, non-randomised trial or observational study, study of diagnostic accuracy, etc.*

***Provide high level information including population numbers and whether patients are being recruited or in post-recruitment.*

****Date of when results will be made available (to the best of your knowledge).*

PART 5 – CLINICAL ENDORSEMENT AND CONSUMER INFORMATION

20. List all appropriate professional bodies / organisations representing the group(s) of health professionals who provide the service (please attach a statement of clinical relevance from each group nominated):

Royal Australian and New Zealand College of Ophthalmologists (RANZCO) – Letter of clinical relevance attached

21. List any professional bodies / organisations that may be impacted by this medical service (i.e. those who provide the comparator service):

RANZCO

Australian and New Zealand Glaucoma Society (ANZGS)

22. List the relevant consumer organisations relevant to the proposed medical service (please attach a letter of support for each consumer organisation nominated):

Glaucoma Australia

23. List the relevant sponsor(s) and / or manufacturer(s) who produce similar products relevant to the proposed medical service:

Ivantis Incorporated – manufacturer of the Hydrus Microstent

24. Nominate two experts who could be approached about the proposed medical service and the current clinical management of the service(s):

Name of expert 1: Prof Paul Healey

Telephone number(s): [redacted]

Email address: [redacted]

Additional contact information can be provided on request

Justification of expertise: Prof Healey is an ophthalmic surgeon specialising in glaucoma and cataract. He holds many regional and worldwide positions including founder Board member and treasurer of the Asia-Pacific Glaucoma Society, Pacific Coordinator of the Asia-Pacific Academy of Ophthalmology, Steering Committee member and Chair of the Associate Advisory Board, Bylaws and the World Glaucoma Day Committees of the World Glaucoma Association. He also has interests in postgraduate education most recently as Director of Training for the Sydney Eye Hospital and medical ethics as a member of the ethics Committee of the Royal Australian and New Zealand College of Ophthalmologists.

Name of expert 2: Dr Colin Clement

Telephone number(s): [redacted]

Email address: [redacted]

Additional contact information can be provided on request

Justification of expertise: Dr Clement is a Fellow of the Royal Australian and New Zealand College of Ophthalmology (FRANZCO), trained in glaucoma, cataract and general ophthalmology. He is a staff specialist at the Sydney Eye Hospital, and a senior lecturer at the University of Sydney. Dr Clement has provided peer review for many ophthalmology journals including Ophthalmology, The British Journal of Ophthalmology, The Indian Journal of Ophthalmology, Graefe's Archive for Clinical and Experimental Ophthalmology, Ophthalmic Research, Clinical Ophthalmology and Clinical Optometry.

Please note that the Department may also consult with other referrers, proceduralists and disease specialists to obtain their insight.

PART 6 – POPULATION (AND PRIOR TESTS), INDICATION, COMPARATOR, OUTCOME (PICO)

PART 6a – INFORMATION ABOUT THE PROPOSED POPULATION

25. Define the medical condition, including providing information on the natural history of the condition and a high level summary of associated burden of disease in terms of both morbidity and mortality:

Natural history of glaucoma

Glaucoma is a chronic, degenerative optic neuropathy characterised by progressive vision loss due to the loss of retinal ganglion cells and optic nerve damage (Kwon 2009; Quigley 2011). Glaucoma is referred to as open-angle (OAG) or closed-angle (CAG) depending on whether the drainage channels for aqueous humor in the front of the eye appear open or closed (Boland 2012). OAG is the most common form, and is usually characterised by optic neuropathy combined with ocular hypertension (OHT, generally defined as IOP > 21 mmHg) (Quigley 2011). Usually bilateral but often asymmetric, OAG painlessly and slowly causes blindness. Unfortunately, in many cases optic nerve damage occurs before functional vision losses are detected via visual field measurements.

There is no universally accepted method for staging the progression of OAG, and a number of staging systems have been published. The 2015 American Academy of Ophthalmology (AAO) Preferred Practice Patterns Guidelines report on primary OAG (POAG) states that the severity of glaucoma damage can be estimated using the following stages or categories (AAO, 2015).

- Mild: Optic disk or retinal nerve fibre layer abnormalities consistent with glaucoma and a normal visual field as tested with standard automated perimetry.
- Moderate: Optic disk or retinal nerve fibre layer abnormalities consistent with glaucoma and visual field abnormalities in one hemifield that are not within 5 degrees of fixation as tested with standard automated perimetry.
- Severe: Optic disk or retinal nerve fibre layer abnormalities consistent with glaucoma as and visual field abnormalities in both hemifields and/or loss within 5 degrees of fixation in at least one hemifield as tested with standard automated perimetry.
- Indeterminate: Optic disk or retinal nerve fibre layer abnormalities consistent with glaucoma as detailed above, inability of patient to perform visual field testing, unreliable/uninterpretable visual field test results.

Many clinical trials have demonstrated elevated IOP as a strong, modifiable risk factor for the development and progression of open-angle glaucoma. It is estimated that between 60% and 85% of patients with open-angle glaucoma exhibit ocular hypertension (Maier et al 2005). As noted above, in OAG, the iridocorneal angle is unobstructed but aqueous outflow is diminished, leading to an elevation of intraocular pressure (Maier et al 2005).

The objective of glaucoma management is to provide a significant and sustained decrease in lOP that minimises the risk of progression (i.e. visual field loss) and impact on the patient's QoL. Normal lOP is generally considered to be between 10 mmHg and 21 mmHg. As noted, ocular hypertension is generally defined as an IOP > 21 mmHg. Management follows a treat-to-target strategy, which is individualised for each patient, based on their baseline IOP and other risk factors.

For the majority of OAG patients, topical hypotensive medication represents the first-line therapy. These treatments are used as initial therapy as they represent the least invasive treatment option. Patients will initiate a single topical mediation, and increase the dosing frequency and number of therapies, as required, in order to maintain a target IOP. There are four main classes of pharmacotherapy used to treat glaucoma in Australia, which are available through the Pharmaceutical Benefits Scheme (PBS). These are described below:

- Prostaglandin analogues: This class are the most commonly prescribed hypotensive medications for glaucoma, and are the first choice for most newly diagnosed patients
- Beta-blockers: The second most commonly prescribed class of topical glaucoma medications and are still used as first-line therapy for some patients

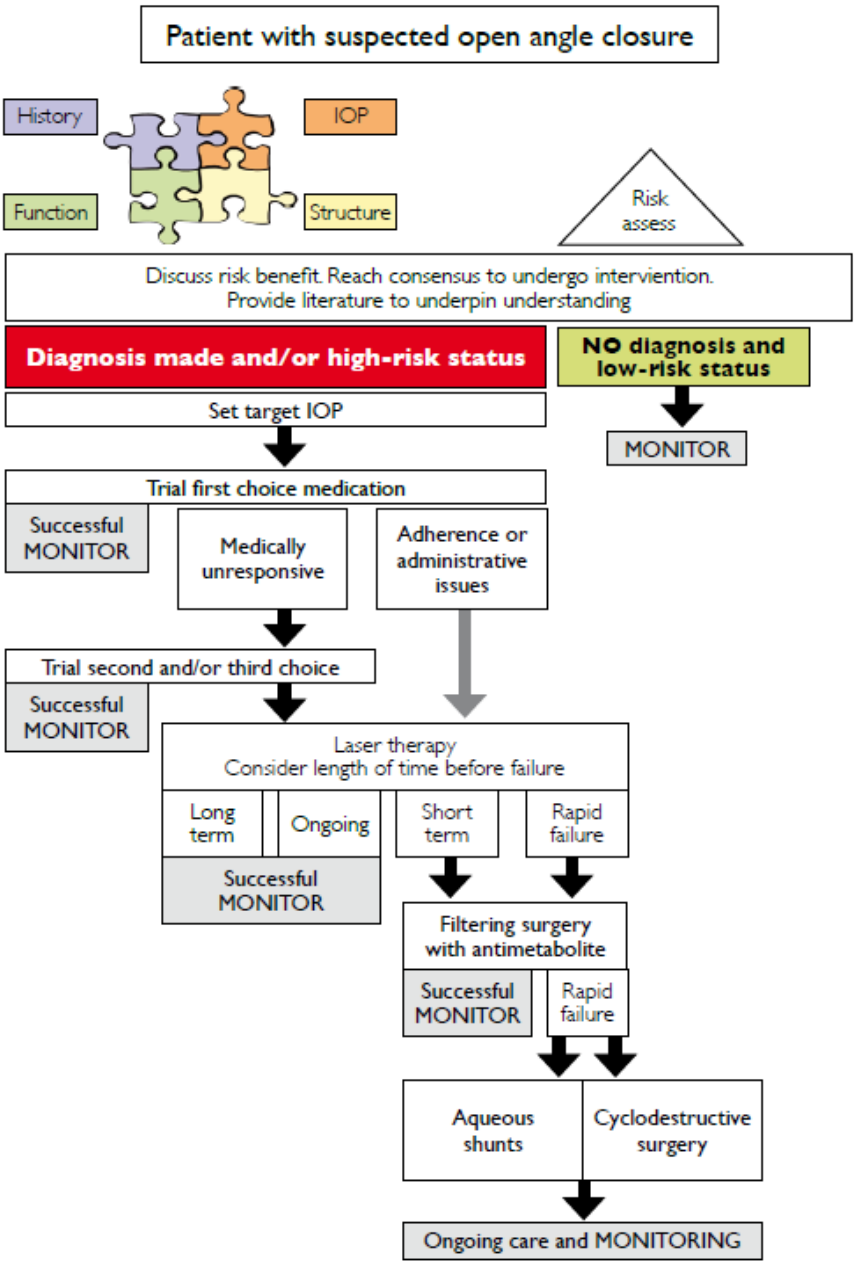
- Alpha agonists and carbonic anhydrase inhibitors: Commonly used as adjunctive therapy when IOP is inadequately controlled with one medication
- Fixed combination agents of the above classes also may be used

As the condition progresses, hypotensive medication may become less efficacious, or patients may have trouble adhering to pharmacotherapy (due to cost, complexity, or physical difficulty in administering eye drops). For such patients, surgical treatment options are considered.

Laser trabeculoplasty uses a laser to initiate cellular and biochemical changes to the trabecular meshwork in order to increase aqueous humor flow and lower IOP. The procedure has been shown to provide clinically significant improvements in IOP, and is usually considered in patients where IOP cannot be adequately managed with medication alone. Following laser trabeculoplasty, more invasive surgical treatment options, known broadly as 'filtering' surgeries, may be considered. This category of procedure includes trabeculectomy, aqueous shunt/filtration device implantation, sclerectomy, viscocanalostomy, canaloplasty, ab interno excimer laser trabeculostomy, and ab interno microelectrocautery of the trabecular meshwork. Such procedures can be effective in lowering and maintaining IOP, but carry a significant risk of complication, including: procedural failure, endophthalmitis, blebitis, bleb leak, or hypotony. Due to these risk factors, filtering surgeries are generally reserved for patients with advanced disease who can no longer maintain IOP with a combination of medication and laser trabeculoplasty.

The current clinical management pathway for patients with mild-to-moderate OAG is summarised under Question 26 and 27 below. The proposed pathways are adapted from the Guidelines for the screening, prognosis, diagnosis, management and prevention of glaucoma (NHMRC, 2010). The pathway for a patient with suspected open-angle glaucoma described in these guidelines is provided in Figure 1.

Figure 1 Open-angle glaucoma pathway (NHMRC 2010)



Burden of illness

Patients with mild glaucoma may be asymptomatic, but as the disease progresses, difficulties may occur with peripheral vision, contrast sensitivity, glare, and light-to-dark and dark-to-light adaptation. In its most severe form, glaucoma results in irreversible blindness (Boland 2012). Visual impairment may affect activities of daily living (eg, driving, walking, and reading), and may decrease quality of life (QoL) and health-related quality of life (HRQoL). Vision loss may also impose a psychological burden on patients due to fear of blindness, social withdrawal, and depression. The impact of glaucoma on HRQoL can be significant in both undiagnosed as well as diagnosed patients, even in the early stages of disease (Varma 2011).

Treatment of OAG incurs substantial annual costs that usually increase over time as the disease progresses. Direct medical costs include ocular hypotensive medication(s), physician and hospital visits, and glaucoma-related procedures; direct nonmedical costs include transportation, government purchase programs, guide dogs, and nursing home care (Varma 2011). Indirect costs reflect lost productivity, such as days missed from work, and the productivity costs borne by caregivers such as family members and

friends. In Australia, one in eight persons over 80 years of age will develop glaucoma, placing a substantial clinical and financial burden on the Australian healthcare system. By 2025, the total annual cost of glaucoma is expected to reach AU$4.3b (Centre for Eye Research 2008; NHMRC 2010).

26. Specify any characteristics of patients with the medical condition, or suspected of, who are proposed to be eligible for the proposed medical service, including any details of how a patient would be investigated, managed and referred within the Australian health care system in the lead up to being considered eligible for the service:

The patient population who will be eligible for the proposed service are those with a confirmed diagnosis of open-angle glaucoma. Guidelines for the screening, prognosis, diagnosis, management and prevention of glaucoma in Australia (NHMRC, 2010) state that diagnosis of glaucoma should be made on the basis of multiple sources of information. An initial consultation would ascertain relevant risk factors, such as age, family history, ethnicity, smoking and diabetes status. In addition, a comprehensive clinical examination would be undertaken including slit lamp examination, tonometry (assessment of intraocular pressure), fundus and optic nerve head examination, gonioscopy, corneal thickness, and visual field examination. A confirmatory diagnosis may require more than one consultation with a health care provider, including the involvement of an ophthalmologist.

The sub-set of glaucoma patients expected to access trabecular bypass MIGS device implantation through the MBS can be broadly divided into two groups;

- those who will undergo implantation in conjunction with cataract surgery, and;
- those who receive the intervention as a stand-alone procedure.

Implantation of trabecular bypass MIGS device in conjunction with cataract surgery

Cataract surgery is common among the patient population expected to access MIGS device implantation through the MBS (i.e. patients aged 55 years or older). Glaucoma and cataract are not necessarily related conditions and their incidence is largely independent of each other. However, micro-stenting will predominantly take place in conjunction with cataract surgery, because addressing these two conditions, when co-existent, in a single operation minimises the risk of surgery-related complications (i.e. infection).

It is estimated approximately 31% of Australians aged 55 or more suffer from cataracts (AIHW 2005). The average age of patients claiming a MBS benefit for cataract surgery (MBS item 42702) in Australia in 2016 was approximately 73 years. Age-specific rates for cataract increase with age for men and women and are well over 70% for men and women aged 80 or more. Among the same sub-group of the Australian population, aged 55 years or older, the prevalence rate for glaucoma is estimated to be 2.7% (Blue Mountains Eye Study, Mitchell et al. 1996). The mean age of patients claiming an MBS benefit for MIGS implantation (MBS item 42758 - Goniotomy), in 2016 was also 73 years.

As the implantation of a MIGS device in this patient population is determined by the presence of a co-morbidity, in this case cataract, whose incidence is largely independent of glaucoma, the treatment history of eligible patients may vary. Primary candidates for trabecular bypass MIGS implantation are patients diagnosed with OAG who are currently treated with ocular hypotensive medication. Medication is generally the first treatment choice for patients with glaucoma. However, conventional medication management is associated with substantial adherence and quality use of medicines issues. Optimal IOP control requires a high level of patient compliance, which presents a complex management issue in a disease that is chronic and largely asymptomatic. There are also a number of common side effects associated with topical hypotensive medication which can impact patient adherence, or necessitate a change in management strategy (NHMRC, 2010).

The therapeutic goal of trabecular bypass MIGS implantation in this patient population would be to maintain IOP at a target level while simultaneously reducing the medication burden for patients. This may be either in the form of a direct reduction in the number of drops required per day, or through obviating the need for an increase in medication over time.

Implantation of trabecular bypass MIGS device as a stand-alone procedure

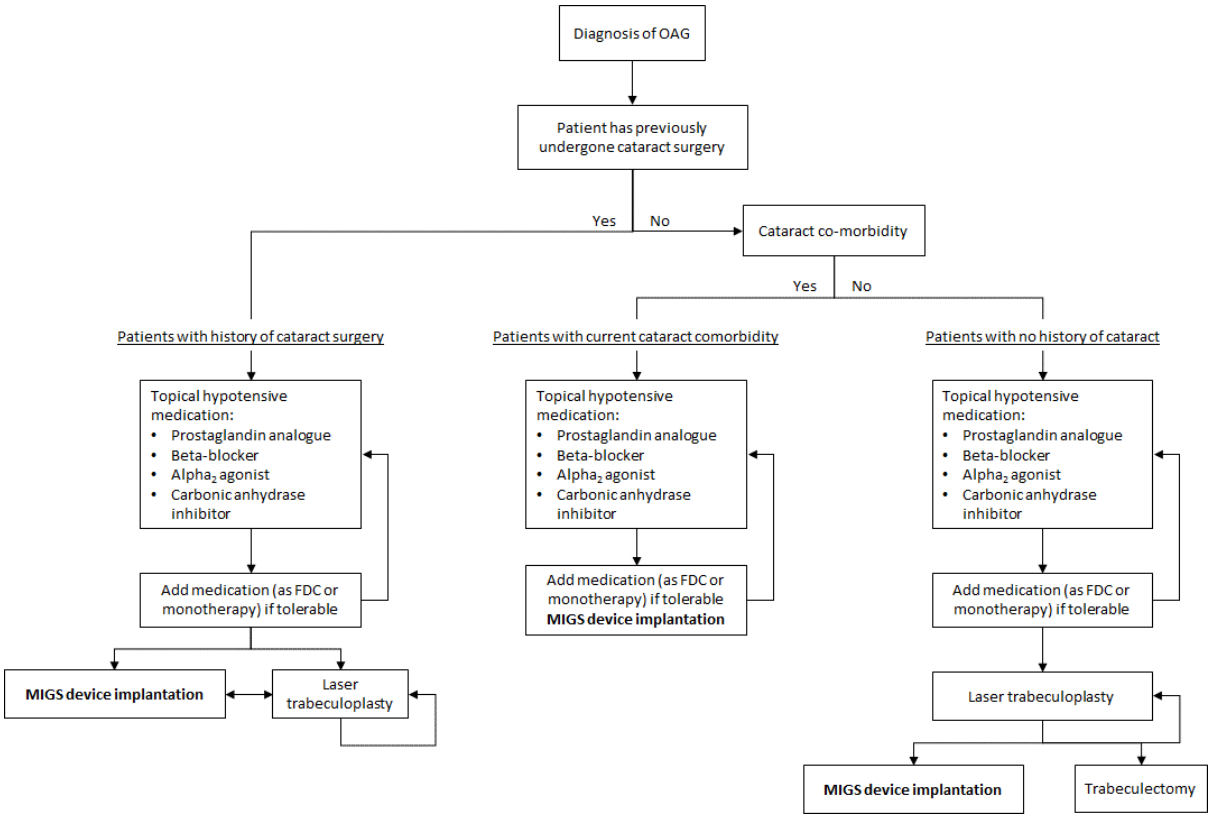
There are two categories of glaucoma patients who would be considered for trabecular bypass MIGS implantation as a stand-alone procedure. These are: i) patients who have previously undergone cataract

surgery (referred to as 'pseudophakic'), and who are currently unable to maintain target IOP with maximally tolerated topical hypotensive medication; and ii) those who do not exhibit lens opacity or other signs of cataract development (described as 'phakic' as they retain their natural crystalline lens), in whom conventional medication management and less invasive interventional techniques (i.e. laser trabeculoplasty) have not been successful.

27. Define and summarise the current clinical management pathway *before* patients would be eligible for the proposed medical service (supplement this summary with an easy to follow flowchart [as an attachment to the Application Form] depicting the current clinical management pathway up to this point):

The current clinical management algorithm for patients diagnosed with open-angle glaucoma prior to trabecular bypass MIGS implantation is depicted in Figure 2. As noted above, eligible OAG glaucoma patients can be categorised into three sub-populations, according to their cataract status.

Figure 2 Current treatment management algorithm for patients with OAG prior to trabecular bypass MIGS device implantation



Source: Adapted from NHMRC Guidelines (2010), Figure 11.1 pg. 161

The clinical management pathway for all three proposed glaucoma sub-populations expected to access MIGS implantation through the MBS begins with a diagnosis of open-angle glaucoma. Prior to trabecular bypass MIGS implantation, first-line therapy in all patient sub-groups is pharmacotherapy with topical hypotensive medication. Patients initiate on a single agent, most commonly a prostaglandin analogue (e.g. latanoprost, travoprost, bimatoprost etc.). If a target IOP cannot be maintained with a single agent, additional topical hypotensive agents may be added (as a fixed-dose combination, or as additional monotherapy). Following pharmacotherapy, treatment proceeds to more invasive interventions including laser trabeculoplasty, and incisional surgery (e.g. trabeculectomy).

As MIGS implantation is an ocular surgical procedure, there is a small but intrinsic risk of complication including infection or other procedural-related adverse events. This provides the primary rational for

categorising the eligible patient population by cataract co-morbidity status. The treatment management pathway for each glaucoma sub-population prior to MIGS implantation is discussed below.

Population 1: Implantation of trabecular bypass MIGS device in conjunction with cataract surgery (middle column, Figure 2)

Glaucoma patients undergoing surgery for a cataract comorbidity represent a unique opportunity to treat both conditions in a single operation, thus minimising the risk of surgery-related complications. As shown in the middle column of Figure 2, trabecular bypass MIGS implantation would be considered early in the management algorithm of such patients, as an adjunctive to topical hypotensive medication. Laser therapy would not be considered as a treatment option in conjunction with cataract surgery as the treatments cannot be performed concomitantly.

Given that the determinant of MIGS implantation is an external event, in this case cataract surgery, eligibility for a trabecular bypass MIGS device should not be conditional on the degree of IOP control currently achieved with topical hypotensive medication. Glaucoma is a progressive condition. Therefore, in many cases patients currently achieving adequate IOP control will nonetheless require increased topical medication, and surgical intervention in the future. As noted, there are clear clinical benefits to trabecular bypass MIGS device implantation in a controlled population, such as a direct reduction in the number of drops required per day, or through obviating the need for an increase in medication over time.

Population 2: Implantation of trabecular bypass MIGS device as a stand-alone procedure in patients who have previously undergone cataract surgery (left-hand column, Figure 2)

As noted above, there are intrinsic risks in any type of ocular surgical intervention. Consequently, clinicians will likely seek to exhaust pharmacotherapy as a treatment option before considering more invasive therapies. The anticipated clinical place for trabecular bypass MIGS implantation in OAG patients with prior cataract surgery is in those patients experiencing inadequate IOP control with maximal-tolerated topical hypotensive medication (due to natural disease progression, unmanageable medication burden leading to poor medication compliance, or other treatment-related adverse events). In the current clinical management pathway, such patients would be considered candidates for laser trabeculoplasty. Laser trabeculoplsaty is a minimally invasive procedure that aims to increase aqueous outflow by targeting the trabecular meshwork. It is generally performed as an outpatient procedure in an ophthalmology clinic.

While initially effective, there appears to be a progressive diminution of the effect of laser therapy over time. One year after therapy, IOP is successfully controlled in approximately 80% of patients, with adequately control achieved in only 50% of patients by year 5 (American Optometric Association [AOA], 2002). In the majority of cases, patients must continue ocular hypotensive medication. Repeated laser therapy is possible, but has a lower success rate and a higher risk of poor outcomes with each subsequent administration (AOA, 2002).

Population 3: Implantation of trabecular bypass MIGS device as a stand-alone procedure in patients with no history of cataract (right-hand column, Figure 2)

As with Population 2 described above, clinicians will seek to exhaust pharmacotherapeutic options prior to considering surgical intervention. Laser therapy is considered an appropriate treatment option in patients exhibiting poor response to medication alone, or who are having trouble administering their topical medication. With ocular surgery involving the anterior chamber, there is a small risk of damage to the natural crystalline lens of the eye. Damage may lead to the development of visual acuity problems, including cataract. Thus, in patients who retain their natural lens (also known as ‘phakic’ patients), the benefits of invasive incisional surgery must be weighed against the risk of such complications.

Patients with no history of cataract would likely be considered candidates for trabecular bypass MIGS implantation when target IOP is not being achieved with two or more medications, or adherence is problematic, and when laser has failed, or is not likely to succeed. This places trabecular bypass MIGS implantation in line with alternative incisional surgical approaches, such as trabeculoplasty.

PART 6b – INFORMATION ABOUT THE INTERVENTION

28. Describe the key components and clinical steps involved in delivering the proposed medical service:

The proposed medical service describes the implantation of a MIGS device into the trabecular meshwork of the eye, to improve aqueous outflow in patients with primary OAG. There are currently three devices available in Australia that depend on the proposed service. While there are aspects of the implantation technique that are specific to each individual device, the overall procedure is comparable in terms of complexity and resource allocation, regardless of the device being implanted. Therefore, the Sponsors consider a single item can adequately describe the relevant service. All three devices are implanted ab interno via a corneal incision, using a pre-loaded delivery system (inserter). The positioning technique is specific to each stent, and is determined by the design of each device. The specific clinical steps for positioning of each device are summarised below.

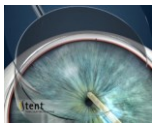
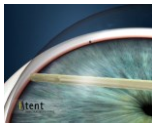
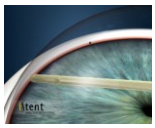
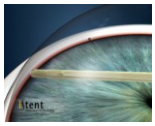
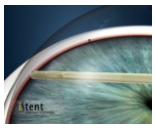
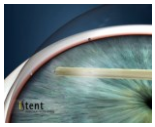
iStent trabecular micro-bypass stent system and iStent inject system

The iStent inject and iStent trabecular micro-bypass stent are inserted ab interno through a corneal incision. The stent on the tip of an inserter (included as part of the stent device prostheses) is guided into the Schlemm canal by gonioscopy. Generally, the leading edge of the stent is inserted into the Schlemm canal at the nasal position (3-4 o'clock in the right eye; 8-9 o'clock in the left eye), with the tip of the stent pointing inferiorly (Craven 2012).

The majority of stent implantation procedures are performed in conjunction with cataract surgery. The procedure is performed under topical anaesthesia.

The surgical steps for implantation of the iStent inject are illustrated in Figure 3. The same procedural steps are followed for implantation of the iStent trabecular micro-bypass stent.

Figure 3 Surgical steps for implantation of iStent inject

Step		Description
1		Fill the anterior chamber with a viscoelastic
2		Introduce the inserter through the phaco incision and advance past the pupillary margin
3		View the angle under high magnification with a gonioprism
4		Approach the upper third of the trabecular meshwork at an angle of 15°
5		Engage the trabecular meshwork and gently advance the stent into Schlemm's canal
6		Push the button on the inserter to release the iStent
7		Release the button and gently tap the side of the snorkel to ensure that the device is properly seated
8		Remove the inserter and then the viscoelastic
9		Repeat above steps to produce final placement of two stents

Hydrus Microstent

For insertion of the Hydrus stent, a 1.5 mm corneal temporal incision is performed to access the target for microstent placement. A high molecular weight viscoelastic is introduced for chamber maintenance and to achieve an optimum view. The Hydrus delivery cannula is then inserted through the corneal incision. The bevelled tip of the cannula is used to perforate the trabecular meshwork, and the microstent is implanted into Schlemm's canal by advancing the tracking wheel, leaving 1–2mm (the inlet segment) remaining in the anterior chamber. Upon gonioscopic confirmation of microstent positioning in the canal, the delivery system is withdrawn and high molecular weight viscoelastic removed (Fea et al, 2016).

Implantation of trabecular bypass MIGS devices has been previously available through the MBS, using the MBS service 42758 (goniotomy). The MSAC have determined the current criteria for claiming this service

does not extend to the implantation of MIGS devices. Nonetheless, advice from the Royal Australian and New Zealand College of Opthalmologists (RANZCO) suggest the fee for this service ($699.45) is a reasonable representation of the cost of delivering the proposed service. Cost information related to the proposed service is discussed in further detail in Section 8 of this application form.

29. Does the proposed medical service include a registered trademark component with characteristics that distinguishes it from other similar health components?

Three trabecular bypass MIGS devices depend on the proposed medical service. Two devices are registered trademarks of Glaukos Corporation (iStent trabecular micro-bypass stent system; iStent inject system). One device is a registered trademark of Ivantis Incorporated (Hydrus microstent).

30. If the proposed medical service has a prosthesis or device component to it, does it involve a new approach towards managing a particular sub-group of the population with the specific medical condition?

The management pathway for a patient with primary open-angle glaucoma has been described above. Primary goal of treatment is to maintain IOP within a target range, individualised for each patient, in order to ameliorate the effects of disease progression on visual function and acuity. The majority of glaucoma patients will initiate treatment with a topical hypotensive medication. As the condition progresses, patients may require additional topical therapy, or surgical intervention to maintain their target IOP.

The proposed medical service describes a therapeutic procedure that will act as an adjunctive to the existing glaucoma management algorithm. The positioning of trabecular bypass MIGS device implantation within current glaucoma management is discussed in detail in Question 26 and 27. Notably, implantation with a trabecular bypass MIGS device does not alter or restrict the downstream surgical interventions available to OAG patients, which may still be required if the patients' glaucoma continues to deteriorate.

MIGS device implantation has been previously funded in Australia under the MBS item code 42758 (goniotomy; see above for an outline of the MBS history of MIGS device implantation). Thus, the medical service is not novel to Australian clinical practice; but its safety, effectiveness and cost-effectiveness in the proposed patient population have not previously been evaluated by MSAC, nor is there an MBS item (current or former) that specifically describes the proposed service. In this way, the service and therapeutic intervention it describes is new to the MSAC.

31. If applicable, are there any limitations on the provision of the proposed medical service delivered to the patient (i.e. accessibility, dosage, quantity, duration or frequency):

The current TGA indication for the iStent inject system and iStent trabecular micro-bypass stent system limits the use of these device to patients currently treated with ocular hypotensive medication. The devices must also be implanted in conjunction with cataract surgery. An application to the TGA is pending which will seek an amendment to the current indication to allow for both iStent systems to be implanted with or without concomitant cataract surgery. Details of this TGA Application are provided below.

The Hydrus Micorstent device is indicated for the reduction of intraocular pressure in patients with primary open angle glaucoma as a standalone treatment or in conjunction with cataract surgery.

There are no other provisions placed on the proposed medical service. The service is provided once only. Patients may have one or more trabecular bypass MIGS devices implanted at a time. This decision to implant multiple stents would be multifaceted, based on individual patient factors and the therapeutic target, and made at the discretion of the treating physician. Implantation of two or more stents would not have a significant impact on the complexity or resource intensity of the delivery procedure.

32. If applicable, identify any healthcare resources or other medical services that would need to be delivered <u>at the same time</u> as the proposed medical service:

In the majority of patients, implantation of a trabecular bypass MIGS device would be delivered in conjunction with cataract surgery (MBS items 42702, 42698, or 42701).

Procedural healthcare resources required for trabecular bypass MIGS implantation are broadly consistent with other incisional ocular surgeries currently available on the MBS. Patients require administration of a topical or local anaesthetic, as well as a light sedative in some cases. Appropriate resource use will be investigated during development of the Submission-Based Assessment.

33. If applicable, advise which health professionals will primarily deliver the proposed service:

Ophthalmologist, Cataract Surgical Specialist

34. If applicable, advise whether the proposed medical service could be delegated or referred to another professional for delivery:

A surgical specialist in the treatment of glaucoma may be delegated to perform the service as a stand-alone procedure, or in place of a cataract surgical specialist

35. If applicable, specify any proposed limitations on who might deliver the proposed medical service, or who might provide a referral for it:

Delivery of the service should be restricted to ophthalmologists specialising in glaucoma or cataract surgical intervention.

36. If applicable, advise what type of training or qualifications would be required to perform the proposed service as well as any accreditation requirements to support service delivery:

Surgeon would be a Fellow of the Royal Australian and New Zealand College of Ophthalmology (RANZCO) or in the RANZCO training program under supervision of the RANZCO Fellow.

Glaukos follow the Standard Operating Procedure and training requirements outlined in the attached US training document. In addition, Glaukos routinely hold Symposia and Peer-to-Peer education sessions.

37. (a) Indicate the proposed setting(s) in which the proposed medical service will be delivered (select all relevant settings):

- ☒ Inpatient private hospital
- ☒ Inpatient public hospital
- ☐ Outpatient clinic
- ☐ Emergency Department
- ☐ Consulting rooms
- ☒ Day surgery centre
- ☐ Residential aged care facility
- ☐ Patient's home
- ☐ Laboratory
- ☐ Other – please specify below

The majority of procedures would be performed in a day-surgery centres and private hospital setting as an admitted patient. A small number of procedures would also be performed in a public hospital setting

(b) Where the proposed medical service is provided in more than one setting, please describe the rationale related to each:

The majority of patients would receive the medical service in a private day-surgery centre (i.e. the same setting as cataract surgery is currently performed). In a small number of cases, patients admitted to public hospital for emergency cataract or glaucoma surgery may be implanted with a trabecular bypass MIGS device.

38. Is the proposed medical service intended to be entirely rendered in Australia?

- ☒ Yes
- ☐ No – please specify below

PART 6c – INFORMATION ABOUT THE COMPARATOR(S)

39. Nominate the appropriate comparator(s) for the proposed medical service, i.e. how is the proposed population currently managed in the absence of the proposed medical service being available in the Australian health care system (including identifying health care resources that are needed to be delivered at the same time as the comparator service):

As noted in Question 26 and 27 above, the appropriate comparator for trabecular bypass MIGS implantation is dependent on the medical history of the patient. Primarily, this is determined by the presence or absence of a cataract co-morbidity.

Population 1: Implantation of trabecular bypass MIGS device in conjunction with cataract surgery

Glaucoma patients undergoing surgery for a cataract comorbidity (Population 1 above) represent a unique opportunity to treat both conditions in a single operation, thus minimising the risk of surgery-related complications. As shown in the middle column of Figure 2 above, MIGS implantation would be considered early in the management algorithm of such patients, as an adjunctive to topical hypotensive medication. Laser therapy would not be considered as a treatment option in conjunction with cataract surgery as the treatments cannot be performed concomitantly. Thus, the appropriate comparator for OAG patients with a cataract co-morbidity is continued, escalating ocular hypotensive medication.

Population 2: Implantation of trabecular bypass MIGS device as a stand-alone procedure in patients who have previously undergone cataract surgery

The anticipated clinical place for trabecular bypass MIGS implantation in OAG patients with prior cataract surgery (Population 2 above) is in those patients experiencing inadequate IOP control with maximal-tolerated topical hypotensive medication (i.e. through natural disease progression or unmanageable medication burden leading to poor medication compliance, or other treatment-related adverse events). In the current clinical management pathway, such patients would be considered candidates for laser trabeculoplasty.

Population 3: Implantation of trabecular bypass MIGS device as a stand-alone procedure in patients with no history of cataract

With ocular surgery in the anterior chamber, there is a small risk of damage to the natural crystalline lens of the eye. Damage may lead to the development of visual acuity issues, including cataract. Thus, in patients who retain their natural lens (also known as 'phakic' patients), the benefits of invasive incisional surgery must be weighed against the risk of such complications.

Patients with no history of cataract would likely be considered candidates for trabecular bypass MIGS implantation when target intraocular pressure is not being achieved with maximal-tolerated medication, or adherence is problematic, and when laser has failed or is not likely to succeed. This places trabecular bypass MIGS implantation in line with alternative incisional surgical approaches, the most common of which is trabeculectomy.

40. Does the medical service that has been nominated as the comparator have an existing MBS item number(s)?

☒ Yes (please provide all relevant MBS item numbers below)
☐ No

Laser trabeculoplasty – MBS item 42782, 42783

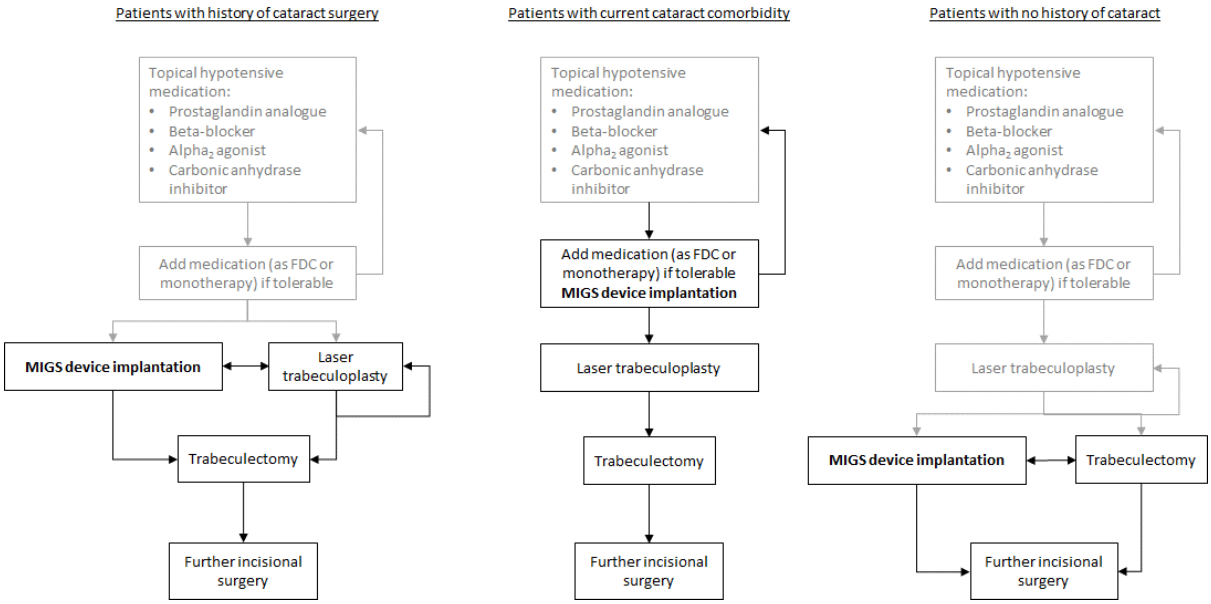
Incisional filtration surgery, including trabeculectomy – MBS item 42746 (first surgery), 42749 (subsequent surgeries)

Other glaucoma surgical intervention (insertion of a drainage device) – MBS item 42752 (insertion), 42755 (removal)

41. Define and summarise the current clinical management pathways that patients may follow *after* they receive the medical service that has been nominated as the comparator (supplement this summary with an easy to follow flowchart [as an attachment to the Application Form] depicting the current clinical management pathway that patients may follow from the point of receiving the comparator onwards including health care resources):

The current clinical management pathway glaucoma patient would follow after implantation with a trabecular bypass MIGS device is summarised in Figure 4. The addition of MIGS implantation to the clinical management pathway for patients with OAG will not alter the downstream treatment options available to patients – however, it is expected to alter the extent to which these options will be required (eg: less reliance on medication to achieve the same iOP target; and/or better iOP control leading to lower rates of progression to more invasive procedures). Thus, the treatment options available to OAG patients following trabecular bypass MIGS implantation will be determined by the clinical place of MIGS in the treatment pathway. The clinical place of the proposed service is discussed in detail in Question 26 and 27 above.

Figure 4 Current treatment management algorithm for patients with OAG after trabecular bypass MIGS device implantation



Source: Adapted from NHMRC Glaucoma Guidelines (2010), Figure 11.1, pg. 161

42. (a) Will the proposed medical service be used in addition to, or instead of, the nominated comparator(s)?

☒ Yes
☐ No

(b) If yes, please outline the extent of which the current service/comparator is expected to be substituted:

The goal of glaucoma treatment is to manage the modifiable risk factors for the deterioration of visual function and acuity (principally IOP), slow disease progression, and delay/obviate the need for downstream invasive surgical interventions. If successful, each step in the glaucoma management pathway may avoid the need for further intervention. Nonetheless, the condition is progressive in nature, and therefore for most patients, the proposed service will represent an additional treatment in their glaucoma management pathway, rather than a replacement. The very fact the use of MIGS is primarily determined by a coincidental comorbidity (i.e. cataract) indicates that MIGS is an addition to current glaucoma management and the appropriate comparator to be treatment as usual.

Long-term controlled data demonstrate a maintenance of IOP lowering effect associated with trabecular micro-bypass stent implantation in conjunction with cataract surgery at 48 months follow-up, compared to cataract surgery alone. These data suggest that over the first 4 years of implantation (the timeframe MSAC use to consider the financial implications to the MBS from the proposed service), a large proportion of patients implanted with a trabecular bypass MIGS device would continue to be adequately managed, without the need for further surgical intervention (Fea et al 2015). Patients assigned micro-bypass stent implantation in this study were also able to reduce the average number of ocular hypotensive medications from 1.9 at baseline, to 0.5 at 48 months (Fea et al 2015). This demonstrates that over the short-term, utilisation of current MBS services for the treatment of glaucoma (laser trabeculoplasty, trabeculotomy) may be reduced. The long-term avoidance rates for these interventions will be explored in the modelled economic evaluation presented in the SBA.

43. Define and summarise how current clinical management pathways (from the point of service delivery onwards) are expected to change as a consequence of introducing the proposed medical service including variation in health care resources (Refer to Question 39 as baseline):

As noted above, the clinical management algorithm of glaucoma from the point of service delivery onwards is not expected to change as a result of MIGS implantation. The implantation of a trabecular bypass MIGS device does not impact the subsequent treatment options available to glaucoma patients. Randomised controlled evidence suggests patients implanted with a MIGS device achieve better IOP control compared to patients treated with standard care (Fea et al 2010, 2015; Craven et al 2012; Samuelson 2011; Katz et al 2015). This suggests patients may progress slower through the management pathway. As a result, patients may utilise fewer healthcare resources over the course of their lifetime. This effect may manifest on the population level as a mean reduction in incisional surgeries per patient, or a reduction in ocular hypotensive medication dispensed through the PBS. The long-term effects on healthcare resource utilisation will be explored in the SBA.

PART 6d – INFORMATION ABOUT THE CLINICAL OUTCOME

44. Summarise the clinical claims for the proposed medical service against the appropriate comparator(s), in terms of consequences for health outcomes (comparative benefits and harms):

Population 1: Implantation of trabecular bypass MIGS device in conjunction with cataract surgery

Implantation of a trabecular bypass MIGS device in conjunction with cataract surgery (and background standard of care) is at least non-inferior in terms of comparative clinical effectiveness compared to patients treated for cataract surgery alone (plus background standard of care).

Implantation of a trabecular bypass MIGS device in conjunction with cataract surgery (and background standard of care) is superior in terms of comparative safety compared to patients treated for cataract surgery alone (plus background standard of care).

Population 2: Implantation of trabecular bypass MIGS device as a stand-alone procedure in patients who have previously undergone cataract surgery

Implantation of a trabecular bypass MIGS device in combination with standard of care (ongoing ocular hypotensive medication), is at least non-inferior in terms of comparative clinical effectiveness compared to patients treated with laser trabeculoplasty plus standard of care.

Implantation of a trabecular bypass MIGS device in combination with standard of care (ongoing ocular hypotensive medication), is at least non-inferior in terms of comparative safety compared to patients treated with laser trabeculoplasty plus standard of care.

Population 3: Implantation of trabecular bypass MIGS device as a stand-alone procedure in patients with no history of cataract

Implantation of a trabecular bypass MIGS device is at least non-inferior in terms of comparative clinical effectiveness compared to patients treated with trabeculotomy.

Implantation of a trabecular bypass MIGS device is superior in terms of comparative safety compared to patients treated with trabeculotomy.

45. Please advise if the overall clinical claim is for:

☒ Superiority
☐ Non-inferiority

46. Below, list the key health outcomes (major and minor – prioritising major key health outcomes first) that will need to be specifically measured in assessing the clinical claim of the proposed medical service versus the comparator:

Safety Outcomes:

Corrected Distance Visual Acuity

Visual field mean deviation

Intraoperative complications

Post-operative ocular complications

Secondary surgical interventions

Clinical Effectiveness Outcomes:

Mean IOP reduction from baseline

Proportion of subjections with IOP reduction ≥ 20%

Proportion of subjections with IOP ≤ 18 mmHg

Absolute IOP reduction

Change in the number of ocular hypotensive medications Proportion of subjects on medication

PART 7 – INFORMATION ABOUT ESTIMATED UTILISATION

47. Estimate the prevalence and/or incidence of the proposed population:

It is estimated that, approximately 2.7% of Australians aged 55 or more suffer from OAG (Blue Mountains Eye Study, 1996). Among the same sub-group of the Australian population, aged 55 years or older, the prevalence rate for cataract is estimated to be approximately 31% (AIHW 2005). Age-specific rates for cataract increase with age for men and women and are well over 70% for men and women aged 80 or more. Prevalence rates are higher among women than men (AIHW 2005).

Based on current population estimates (ABS, June 2016), these prevalence rates translate to 174,839 persons aged 55 years and older diagnosed with OAG in Australia. Of these glaucoma patients (assuming the prevalence of cataract is independent of glaucoma status), 54,200 would be expected to have a cataract co-morbidity.

48. Estimate the number of times the proposed medical service(s) would be delivered to a patient per year:

The proposed service is a one-off procedure. In rare circumstances, a patient may require re-positioning or replacement of their trabecular bypass MIGS device. The procedure to re-position or replace a trabecular bypass MIGS device is comparable to implantation. Nonetheless, a distinct MBS is proposed for implantation and repositioning/removal. The Applicants are willing to take the Department's advice as to whether separate MBS item numbers are required for these procedures.

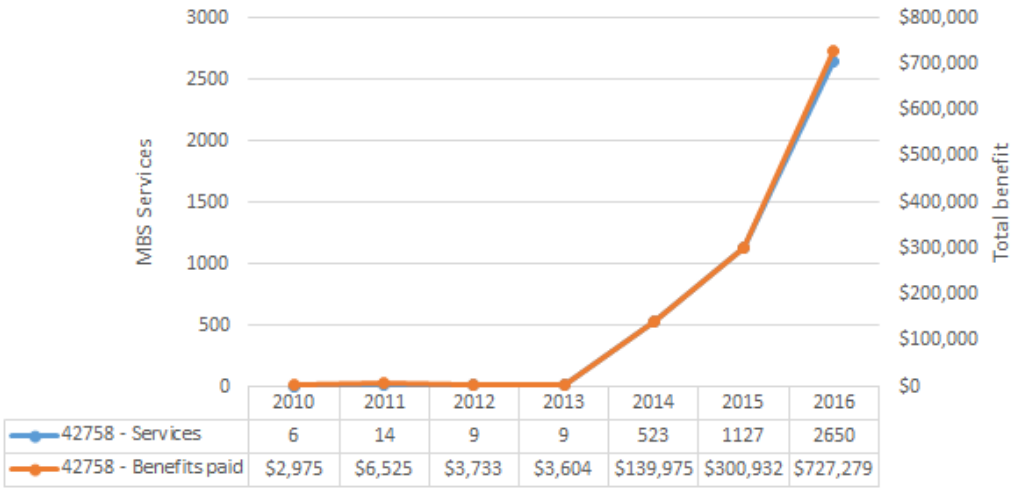
49. How many years would the proposed medical service(s) be required for the patient?

Implantation is permanent and remains in place in the trabecular meshwork of the eye, unless removed or repositioned.

50. Estimate the projected number of patients who will utilise the proposed medical service(s) for the first full year:

In 2016, 2,650 MBS services were claimed for the implantation of a MIGS device (using the MBS item for goniotomy – 42758) (Figure 5).

Figure 5 Total services claimed and benefits paid for MBS item 42758 (goniotomy): 2010-16



	2010	2011	2012	2013	2014	2015	2016
42758 - Services	6	14	9	9	523	1127	2650
42758 - Benefits paid	$2,975	$6,525	$3,733	$3,604	$139,975	$300,932	$727,279

Source: www.medicarestatistics.humanservices.gov.au/statistics/

It is expected that utilisation of the proposed MBS service would continue to grow but at a reduced rate of the first four years of MBS listing. The total number of services would be naturally limited by the availability of resources able to deliver the service (i.e. ophthalmologist time, day-surgery room

availability etc.). It is estimated between 3,000 and 3,500 patients would access the proposed MBS service in the first full year of MBS listing.

51. Estimate the anticipated uptake of the proposed medical service over the next three years factoring in any constraints in the health system in meeting the needs of the proposed population (such as supply and demand factors) as well as provide commentary on risk of 'leakage' to populations not targeted by the service:

As noted, ophthalmologist are familiar with the proposed service. In 2016, 2,650 services were delivered under the MBS item code 42758. Utilisation would be expected to return to similar levels once MBS funding for the proposed service is restored. It is also anticipated that growth will continue, but at a reduced rate relative to that observed between 2014 and 2016, for the first four years of MBS listing.

A broad eligibility criteria is proposed for trabecular bypass MIGS device implantation through the MBS. This reflects the complex and complicated nature of glaucoma management. A treatment pathway is tailored to each patient based on their individual risk profile (age, health status, ethnicity etc.), and well established clinical guidelines. Leakage into earlier or later lines of therapy would be considered against clinical practice and is considered unlikely to occur. Further, the interventions are specifically designed to address the pathophysiology of OAG. As such, leakage into other forms of glaucoma (i.e. normal tension glaucoma, angle closure glaucoma) is also not expected.

PART 8 – COST INFORMATION

52. Indicate the likely cost of providing the proposed medical service. Where possible, please provide overall cost and breakdown:

Implantation of trabecular bypass MIGS devices has been previously available through the MBS, using the MBS service 42758 (goniotomy). Advice from the Royal Australian and New Zealand College of Opthalmologists (RANZCO) suggest the fee for this service ($699.45) is a reasonable representation of the true cost of delivering the proposed service.

A comprehensive cost analysis of the proposed service will be undertaken during development of the SBA. The MBS fee for trabecular bypass MIGS device implantation would be expected to be similar to the current fee for MBS item 42758.

53. Specify how long the proposed medical service typically takes to perform:

The procedure requires approximately 30-60 minutes of operating and preparation time.

54. If public funding is sought through the MBS, please draft a proposed MBS item descriptor to define the population and medical service usage characteristics that would define eligibility for MBS funding.

Category 3 – THERAPEUTIC PROCEDURES
Proposed item descriptor: GLAUCOMA, implantation, repositioning, or removal of, a micro-invasive glaucoma surgery stent system into the trabecular meshwork, in patients diagnosed with primary open-angle glaucoma currently treated with ocular hypotensive medication. Can be delivered as a stand-alone procedure or in conjunction with cataract surgery. When delivered as a stand-alone procedure, the patient must have inadequate IOP control with maximally-tolerated ocular hypotensive medication Multiple Services Rule Fee: $699.45 [approximate fee based on MBS item 42758 – to be determined]

Category 3 – THERAPEUTIC PROCEDURES
Proposed item descriptor: GLAUCOMA, repositioning or removal of, a micro-invasive glaucoma surgery stent system from the trabecular meshwork Multiple Services Rule Fee: $699.45 [approximate fee based on MBS item 42758 – to be determined]

PART 9 – FEEDBACK

The Department is interested in your feedback.

55. How long did it take to complete the Application Form?

Insert approximate duration here

56. (a) Was the Application Form clear and easy to complete?

☐ Yes
☐ No

(b) If no, provide areas of concern:

Describe areas of concern here

57. (a) Are the associated Guidelines to the Application Form useful?

☐ Yes
☐ No

(b) If no, what areas did you find not to be useful?

Insert feedback here

58. (a) Is there any information that the Department should consider in the future relating to the questions within the Application Form that is not contained in the Application Form?

☐ Yes
☐ No

(b) If yes, please advise:

Insert feedback here