Table 32: Effect of MIGS Versus Comparators on IOP in Adults With Glaucoma

Quality Assessment							Summary of Findings				Importance
							No. of Eyes		Effect	Quality	
No. of Studies	Study Design	Risk of Bias	Inconsistency	Indirectness	Imprecision	Other Considerations	MIGS	Comparator			
MIGS Vs. Pharmacotherapy: 2x iStent Vs. Travoprost, or 2x iStent Inject Vs. Latanoprost + Timolol											
2	RCT[a]	Very serious risk of bias[b]	No serious inconsistency	No serious indirectness	Serious imprecision[c]	None	2x iStent, 54 2x iStent Inject, 94	Travoprost, 47 Latanoprost + Timolol, 98	**MIGS [?] Pharmacotherapy: IOP** was numerically reduced from baseline at 1 to 36 mo following 2x iStent or Travoprost (reduction of ~10 mm Hg),[58] or at 1 to 12 mo following 2x iStent Inject or Latanoprost + Timolol (reduction of ~8 mm Hg),[36] but differences within or between groups were not tested statistically.[36,58]	⊕OOO VERY LOW	CRITICAL
MIGS Vs. Laser Therapy: Hydrus Microstent Vs. SLT											
1	Prospective cohort[d]	Serious risk of bias[e]	No serious inconsistency	No serious indirectness	Serious imprecision[f]	None	56	31	**MIGS = Laser Therapy: IOP** was significantly reduced from baseline at 1 to 12 mo following Hydrus Microstent or SLT (reduction of ~4 mm Hg to 7 mm Hg), but was not significantly different between groups at any time point.[62]	⊕OOO VERY LOW	CRITICAL
MIGS Vs. Another MIGS: 1x Vs. 2x Vs. 3x iStent											
1	RCT[g]	Serious risk of bias[g]	No serious inconsistency	No serious indirectness	Serious imprecision[i]	None	iStent, 38 2x iStent, 41	NA[j]	**1 iStent < 2 iStents < 3 iStents: IOP** was significantly reduced from baseline in all groups at 18 mo follow-up and the reduction was incrementally greater with increasing numbers of iStents (reduction of ~4 mm Hg, 6 mm Hg, and 8 mm Hg for 1, 2, and 3	⊕⊕OO LOW	CRITICAL

Quality Assessment							Summary of Findings				Importance
							No. of Eyes		Effect	Quality	
No. of Studies	Study Design	Risk of Bias	Inconsistency	Indirectness	Imprecision	Other Considerations	MIGS	Comparator			
							3x iStent, 40		iStents, respectively; not tested statistically at other follow-up time points up to 42 mo).[59,60]		
MIGS Vs. Filtration Surgery: ECP Vs. Glaucoma Drainage Device											
2	Retrospective cohort and non-randomized controlled clinical trial[k]	Serious risk of bias[l]	No serious inconsistency	No serious indirectness	No serious imprecision	None	59	BGI, 48 AGI, 34	**MIGS = Glaucoma Drainage Device:** Retrospective cohort study: **IOP** was significantly reduced from baseline (reduction of ~7 mm Hg to 11 mm Hg) in both ECP and BGI groups at 3 to 24 mo follow-up, but was not different between groups at any time point.[63] Non-randomized controlled clinical trial: **IOP** was significantly reduced from baseline (reduction of ~19 mm Hg to 36 mm Hg) in both ECP and AGI groups from 1 wk to 24 mo follow-up (only tested statistically at 24 mo); the reduction in IOP was significantly greater in AGI vs. ECP at 1 wk, in ECP vs. AGI at 2, 3, and 4 mo, and was not significantly different between groups thereafter up to 24 mo follow-up.[61]	⊕OOO VERY LOW	CRITICAL
MIGS Vs. Filtration Surgery: Trabectome Vs. Trabeculectomy With MMC											
2	Prospective cohort and retrospective cohort[m]	Serious risk of bias[n]	No serious inconsistency[o]	No serious indirectness	Serious imprecision[p]	None	158	127	**Mixed Findings; Trabectome [?]/< Trabeculectomy With MMC:** Prospective cohort study: **IOP** was significantly reduced from baseline (reduction of ~4 mm Hg to 15 mm Hg) in both the Trabectome and Trabeculectomy groups at 6 mo (to ~14.7 mm Hg and 12.9 mm Hg, respectively), but between-group differences	⊕OOO VERY LOW	CRITICAL

Quality Assessment							Summary of Findings				Importance
							No. of Eyes		Effect	Quality	
No. of Studies	Study Design	Risk of Bias	Inconsistency	Indirectness	Imprecision	Other Considerations	MIGS	Comparator			
									were not tested statistically.[25] Retrospective cohort study: **IOP** was numerically reduced from baseline in both groups (not tested statistically), and was significantly higher in the Trabectome vs. Trabeculectomy group at all follow-up time points (1 to 30 mo; at 30 mo IOP ~16.6 and 10.0 mm Hg respectively).[64]		
MIGS Vs. Filtration Surgery: 2x iStent Inject Vs. Trabeculectomy With MMC											
1	Prospective cohort[q]	Serious risk of bias[r]	No serious inconsistency	No serious indirectness	Serious imprecision[s]	None	20	25	**2x iStent Inject [?] Trabeculectomy with MMC:** **IOP** was significantly reduced from baseline (reduction of ~5 mm Hg to 15 mm Hg) in both 2x iStent Inject and Trebculectomy groups at 6 mo (to ~16.0 mm Hg and 12.9 mm Hg, respectively), but between-group differences were not tested statistically.[25]	⊕OOO VERY LOW	CRITICAL
MIGS Vs. Filtration Surgery: Trabectome or 2x iStent Inject Vs. Trabeculectomy With MMC											
1	Prospective cohort[q]	Serious risk of bias[r]	No serious inconsistency	No serious indirectness	Serious imprecision[s]	None	63	25	**MIGS = Trabeculectomy with MMC:** **IOP** was significantly lower in the Trabeculectomy vs. MIGS (combined Trabectome and 2x iStent Inject) groups at 6 wk and 3 mo (by ~2 mm Hg to 3 mm Hg), but there was no significant difference between groups at 6 mo follow-up.[25]	⊕OOO VERY LOW	CRITICAL
MIGS Vs. Filtration Surgery: Xen45 With MMC Vs. Trabeculectomy With MMC											
1	Retrospective cohort[t]	Serious risk of bias[u]	No serious inconsistency	No serious indirectness	Serious imprecision[v]	None	185	169	**Xen45 with MMC = Trabeculectomy with MMC:** **IOP** was not significantly different between Xen45 and	⊕OOO VERY LOW	CRITICAL

Quality Assessment							Summary of Findings			Importance
							No. of Eyes		Effect	Quality	
No. of Studies	Study Design	Risk of Bias	Inconsistency	Indirectness	Imprecision	Other Considerations	MIGS	Comparator			
									Trabeculectomy groups at follow-up (median follow-up duration of 15.0 and 17.8 mo, respectively).[65]		

= = not significantly different between groups; > = intervention more favourable than comparator; < = intervention less favourable than comparator; [?] = not compared statistically or non-interpretable; 1x = one device; 2x = two devices; 3x = three devices; AGI = Ahmed glaucoma implant; BGI = Baerveldt glaucoma implant; ECP = endoscopic cyclophotocoagulation; IOP = intraocular pressure; MIGS = minimally invasive glaucoma surgery; MMC = mitomycin C; mo = months; NA = not applicable; no. = number; RCT = randomized controlled trial; SLT = selective laser trabeculoplasty; vs. = versus; wk = weeks; y = years.

Note: Data were collected by RCT, non-randomized controlled clinical trial, retrospective or prospective cohort, with up to 42 months of follow-up. IOP was measured by Goldmann applanation tonometry.

[a] Two RCTs.[36,58]

[b] Very serious risk of bias. Selection bias: no indication of allocation concealment.[36,58] Detection bias: unclear whether diurnal variation accounted for in measurement of IOP;[58] no blinding of outcome assessors.[36,58] Attrition bias: low-risk at 12- and 24-month follow-up; large amount of missing data at 36-month follow-up and reasons not reported.[58] Reporting bias: no statistical comparisons conducted;[58] insufficient reporting of *P* values.[36]

[c] Serious imprecision. No measures of variability in one study,[58] and wide confidence intervals leading to uncertainty about the true magnitude of the effect in the other.[36]

[d] One prospective cohort study.[62]

[e] Serious risk of bias.[62] Bias due to confounding: significant differences between groups at baseline were not controlled, and treatment arm was assigned by geographical location. Bias in measurement of outcome: diurnal variation was not accounted for in measurement of IOP.

[f] Serious imprecision. Only a single study, and the variability in the estimate (standard deviation) was similar in magnitude to the parameter (mean).[62]

[g] One RCT in two publications.[59,60]

[h] Serious risk of bias.[59,60] Selection bias: no indication of allocation concealment. Detection bias: unclear whether diurnal variation accounted for in measurement of IOP.

[i] Serious imprecision. Only a single study.[59,60]

[j] In this study, eyes with different numbers of iStents (all MIGS) were compared.[59,60]

[k] One retrospective cohort[63] and one non-randomized controlled clinical trial.[61]

[l] Serious risk of bias.[61,63] Bias due to confounding: different surgeons performed endoscopic cyclophotocoagulation and BGI surgery;[63] pseudorandomization (first patient randomized, followed by counterbalanced enrolment);[61] potential confounding variables not controlled for in analyses.[61,63] Bias in selection of participants: only those with two-year complete data were included and it is possible that those with complete data were systematically different from those without complete data (i.e., different from those in routine clinical practice).[63] Bias due to missing data: large loss to follow-up, amount of missing data not balanced across groups, and reasons for missing data not reported.[61,63] Bias in measurement of outcomes: diurnal variation was not accounted for in measurement of IOP; IOP was measured without medication washout and the number of medications was significantly different between groups.[63] Bias in selection of the reported result: some preoperative population characteristics that were measured were not reported.[63]

[m] One prospective cohort[25] and one retrospective cohort study.[64]

[n] Serious risk of bias.[25,64] Bias due to confounding: decision for MIGS versus Trabeculectomy was made by treating surgeon based on patient characteristics, and choice of MIGS was made by individual patients;[25] retrospective study and rationale for assigning treatments likely to be different between groups;[64] significant differences between groups at baseline;[64] potential confounding variables not controlled for in analyses.[25,64] Bias due to deviations from intended interventions: important co-intervention not balanced between groups (number of medications significantly different between groups).[25,64] Bias due to missing data: large loss to follow-up and reasons for missing data not reported.[64] Bias in measurement of outcomes: diurnal variation was not accounted for in measurement of IOP; IOP was measured without medication washout and the number of medications was significantly different between groups.[25,64]

[o] No serious inconsistency. Mixed findings may be due to between-study differences in patient characteristics,[25,64] lack of between-group statistical comparison in one study,[25] and/or differences in sample size (for the Trabectome and Trabeculectomy groups, respectively: 43 and 25 eyes[25] versus 115 and 102 eyes).[64]

[p] Serious imprecision. No measures of variability in one study.[25]

[q] One prospective cohort study.[25]

[r] Serious risk of bias.[25] Bias due to confounding: decision for MIGS versus Trabeculectomy was made by treating surgeon based on patient characteristics, and choice of MIGS was made by individual patients; potential confounding variables not controlled for in analyses. Bias due to deviations from intended interventions: important co-intervention not balanced between groups (number of medications significantly different between groups). Bias in measurement of outcomes: diurnal variation was not accounted for in measurement of IOP; IOP was measured without medication washout and the number of medications was significantly different between groups.

[s] Serious imprecision. Only a single study, and no measures of variability.[25]

[t] One retrospective cohort study.[65]

[u] Serious risk of bias.[65] Bias due to confounding: significant differences between groups at baseline; potential confounding variables not controlled for in analyses. Bias in selection of participants: patients with < 1 month follow-up were excluded and it is possible that those with <1 month follow-up were systematically different from those with ≥ 1 month follow-up (i.e., different from those in routine clinical practice). Bias due to missing data: no information on amount or nature of missing data was reported. Bias in measurement of outcomes: diurnal variation was not accounted for in measurement of IOP. Bias in selection of the reported result: no rationale for reporting findings as medians instead of means, and absolute values reported only at “last follow-up.”

[v] Serious imprecision. Only a single study.[65]