Glaucoma

Translating Evidence Into Clinical Practice:

A game of true or false
Needs Assessment

• Compilation of your requests from last year’s COS
• Survey that was sent out to your Canadian colleagues to assess specific needs in eight subject areas
• Program statements (True or False) were developed to meet these needs
Objectives

• Differentiate among optimal & cost effective technologies
• Identify benefits and challenges regarding new surgical procedures
• Discuss emerging evidence-based treatment options
• Distinguish between ALT and SLT
• Assess neuroprotection strategies
Program Process

1. One true or false statement will be read
2. Discuss answer at your table
3. Vote on your answer using voting grid (on table)
4. Panel will reveal the answer
5. Multiple choice rationale will be presented
6. Discuss your answer as a group
7. Vote on your answer (using voting grid)
8. Panel will provide ‘correct’ answer and evidence to support the answer
Program Timing

• 1 minute: Read statement and vote
• 2 minutes: Read rationale and vote
• 2 minutes: Reveal answer
• 1 minute background information where necessary
Ground Rules

• Everyone at each table participates
• Honor the time bell!
• Limit side bar (off topic) conversations
• Write additional questions down on question card
• Enjoy the competition!!!
Let the Game Begin!
Q. 1: Current endpoints of clinical trials for neuroprotection in glaucoma include central visual acuity

True or False?
FALSE
Related Questions

A. Central visual acuity is affected late in glaucoma
B. Central visual acuity is least affected by elevated intraocular pressure
C. Visual field damage is used to monitor glaucoma damage
D. Visual field progression is related to the level of intraocular pressure
Answer

A. Central visual acuity is affected late in glaucoma (T)
B. Central visual acuity is least affected by elevated intraocular pressure (T)
C. Visual field damage is used to monitor glaucoma damage (T)
D. Visual field progression is related to the level of intraocular pressure (F)
Q.2 : Glutamate is a major neurotransmitter in the retina and excessive glutamate is implicated in glaucoma damage

True or False?
True
Related Questions

A. Blocking glutamate toxicity may help to prevent cell death
B. Blockage of all glutamate receptors in the retina will improve visual function
C. Memantine is a drug used in Parkinson’s and Alzheimer’s disease, currently being tested in clinical trials for glaucoma
D. Brimonididine is both a glutamate blocker and lowers intraocular pressure
Answer

A. Blocking glutamate toxicity may help to prevent cell death (T)
B. Blockage of all glutamate receptors in the retina will improve visual function
C. Memantine is a drug used in Parkinson’s and Alzheimer’s disease, currently being tested in clinical trials for glaucoma (T)
D. Brimonidine is both a glutamate blocker and lowers intraocular pressure
Q. 3 : Blood flow disturbances are not considered to be important in glaucomatous disease

True or False?
FALSE
Related Questions

A. Raynaud’s and migraines are risk factors for glaucoma
B. Patients with disc hemorrhages are at higher risk for glaucoma progression
C. Glaucoma medications do not improve perfusion pressure
D. Ischemia is part of the glaucomatous process
Answer

A. Raynaud’s and migraines are risk factors for glaucoma (T)

B. Patients with disc hemorrhages are at higher risk for glaucoma progression(T)

C. Glaucoma medications do not improve perfusion pressure

D. Ischemia is part of the glaucomatous process
Q. 4 In normal tension glaucoma, lowering intraocular pressure does little to prevent disease progression.

True or False?
FALSE
Related Questions

A. Lowering intraocular pressure is a secondary treatment consideration in NTG
B. NTG should be treated with calcium channel blockers as primary treatment
C. Left untreated, the NTG study showed that progression was seen almost equal to the treated group
D. IOP lowering by 30% is beneficial in preventing progressive visual field loss in NTG
Answer

A. Lowering intraocular pressure is a secondary treatment consideration in NTG
B. NTG should be treated with calcium channel blockers as primary treatment
C. Left untreated, the NTG study showed that progression was seen almost equal to the treated group
D. IOP lowering by 30% is beneficial in preventing progressive visual field loss in NTG (T)
Q. 5: Brimonidine has been shown to enhance retinal ganglion cell survival in humans

True or False?
FALSE
Related Questions

A. RGC survival improves in the rat crush model after brimonidine
B. RGC survival improves in experimental culture conditions after brimonidine
C. RGC survival improves in non-human primate with topical brimonidine
D. Visual function improves in glaucoma patients with topical brimonidine
Answer

A. RGC survival improves in the rat crush model after brimonidine (T)
B. RGC survival improves in experimental culture conditions after brimonidine (T)
C. RGC survival improves in non-human primate with topical brimonidine
D. Visual function improves in glaucoma patients with topical brimonidine
Q. 6: Mr. DW has advanced glaucoma with 0.9 cups and intraocular pressures of 28 mmHg OU. Reasonable IOP targets are 20 OU.

True or False?
FALSE
Related Questions

A. AGIS suggests low teens for advanced GON to prevent visual field progression
B. SLT may have even greater benefit than trabeculectomy in advanced cases
C. SLT is a reasonable first line treatment in this patient
D. This patient is likely to be controlled on monotherapy
Answers

A. AGIS suggests low teens for advanced GON to prevent visual field progression (T)
B. SLT may have even greater benefit than trabeculectomy in advanced cases
C. SLT is a reasonable first line treatment in this patient
D. This patient is likely to be controlled on monotherapy
Q. 7: Cataract surgery by phacoemulsification in open angle glaucoma patients may improve intraocular pressure control.

True or False?
Related Questions

A. Cataract surgery alone may lower IOP but not as much as cataract surgery combined with trabeculectomy.

B. Cataract surgery alone is a good choice for patients with poorly controlled IOP who require cataract extraction.

C. Cataract surgery should always be preceded by glaucoma surgery in patients with uncontrolled intracocular pressure.

D. Cataract surgery has been shown to benefit patients during an attack of acute angle closure glaucoma.
Answer

A. Cataract surgery alone may lower IOP but not as much as cataract surgery combined with trabeculectomy. (T)

B. Cataract surgery alone is a good choice for patients with poorly controlled IOP who require cataract extraction

C. Cataract surgery should always be preceded by glaucoma surgery in patients with uncontrolled intracocular pressure

D. Cataract surgery has been shown to benefit patients during an attack of acute angle closure glaucoma (T)
Q. 8: The CIGTS (collaborative initial glaucoma treatment study) found that there was no difference in visual field deterioration between glaucoma patients receiving early filtration surgery versus medical therapy in the early treatment of their glaucoma. True or False?
TRUE
Related Questions

A. The CIGTS study was designed to see if early surgery was better than early medication in the initial treatment of glaucoma

B. The CIGTS study found that early surgery produced lower mean IOP compared to early medical intervention

C. There were more cataracts in the early surgery group compared to the early medical therapy group in the CIGTS study

D. Without the use of mitomycin the results of the CIGTS would have been different
Answer: All

A. The CIGTS study was designed to see if early surgery was better than early medication in the initial treatment of glaucoma
B. The CIGTS study found that early surgery produced lower mean IOP compared to early medical intervention
C. There were more cataracts in the early surgery group compared to the early medical therapy group in the CIGTS study
D. Without the use of mitomycin the results of the CIGTS would have been different
Q. 9: Seton implant surgery is more successful with the use of antimetabolites.

True or False?
FALSE
Related Questions

A. Seton tube shunts were designed to overcome conjunctival scarring issues

B. Mitomycin was initially used to improve the success rate of trabeculectomy in eyes at risk for failure

C. Mitomycin could potentially increase the complication rate of seton implants

D. The use of mitomycin with seton implants is strongly recommended by the manufacturers
Answer

A. Seton tube shunts were designed to overcome conjunctival scarring issues (T)

B. Mitomycin was initially used to improve the success rate of trabeculectomy in eyes at risk for failure (T)

C. Mitomycin could potentially increase the complication rate of seton implants (T)

D. The use of mitomycin with seton implants is strongly recommended by the manufacturers
Q. 10: Bleb needling for a failing filtering bleb is a successful way to rescue a failing filtering bleb.

True or False?
TRUE
Related questions

A. Bleb needling works all of the time
B. Bleb needling is often done with the aid of anti-metabolites
C. Bleb needling works less than 30% of the time
D. Bleb needling can have potential complications including infection, hyphema and hypotony
Answer

A. Bleb needling works all of the time
B. Bleb needling is often done with the aid of anti-metabolites (T)
C. Bleb needling works less than 30% of the time
D. Bleb needling can have potential complications including infection, hyphema and hypotony (T)
Q. 11: Annual visual field testing alone is sufficient for detecting glaucoma progression

True or False?
FALSE
Related Questions

A. Clinical and scientific evidence suggests that structural changes including disc hemorrhages, nerve fiber layer loss, optic disc morphological changes occur before alterations in the visual field are seen on conventional perimetry

B. Careful observation of the optic nerve at each patient visit yields bigger dividends in early detection of disease or progression than visual field testing alone

C. The Heidelberg retinal tomogram is now the gold standard for monitoring glaucoma

D. Emerging technologies continue to evolve in the area of objective structural monitoring of the optic nerve and retinal nerve fiber layer
Answer

A. Clinical and scientific evidence suggests that structural changes including disc hemorrhages, nerve fiber layer loss, optic disc morphological changes occur before alterations in the visual field are seen on conventional perimetry (T)

B. Careful observation of the optic nerve at each patient visit yields bigger dividends in early detection of disease or progression than visual field testing alone (T)

C. The Heidelberg retinal tomogram is now the gold standard for monitoring glaucoma

D. Emerging technologies continue to evolve in the area of objective structural monitoring of the optic nerve and retinal nerve fiber layer (T)
Q. 12: The Heidelberg retinal tomograph will distinguish between normal subjects and those patients with early glaucoma every time

True or False?
FALSE
Related Questions

A. The Heidelberg tomograph is influenced by corneal birefringence which gives false positives
B. The Heidelberg tomograph results are influenced by the level of IOP at the time of measurement
C. The Heidelberg tomograph can provide good separation between control subjects and those subjects with early glaucoma
D. The Heidelberg tomograph has an optional attachment which allows it to make both regular coffee and expresso
A. The Heidelberg tomograph is influenced by corneal birefringence which gives false positives
B. The Heidelberg tomograph results are influenced by the level of IOP at the time of measurement (T)
C. The Heidelberg tomograph can provide good separation between control subjects and those subjects with early glaucoma (T)
D. The Heidelberg tomograph has an optional attachment which allows it to make both regular coffee and expresso
Q. 13: The standard of care now requires the use of emerging optic nerve head imaging technology above and beyond disc photographs in the management of glaucoma

True or False?
FALSE
Related Questions

A. It’s important to document the appearance of the optic nerve at the time of initial glaucoma diagnosis

B. Drawing the optic nerve by hand is less desirable than optic disc photographs but may be the standard of care in some regions

C. Optic disc photographs are an excellent way of documenting the optic nerve appearance

D. Other emerging technologies for documenting the appearance of the optic nerve at baseline show great promise
Answer: All

A. It’s important to document the appearance of the optic nerve at the time of initial glaucoma diagnosis
B. Drawing the optic nerve by hand is less desirable than optic disc photographs but may be the standard of care in some regions
C. Optic disc photographs are an excellent way of documenting the optic nerve appearance
D. Other emerging technologies for documenting the appearance of the optic nerve at baseline show great promise
Q. 14: Diurnal Fluctuation of intraocular pressure is an independent risk factor for glaucoma disease progression

True or False?
TRUE
Related Questions

A. Accounts for phase of moon which may influence intraocular pressure
B. Uncovers wide intraocular pressure fluctuation which could be missed on routine single intraocular pressure measurements
C. Always indicates poor compliance
D. Reflects changes in corneal thickness throughout the day
Answer

A. Accounts for phase of moon which may influence intraocular pressure
B. Uncovers wide intraocular pressure fluctuation which could be missed on routine single intraocular pressure measurements (T)
C. Always indicates poor compliance
D. Reflects changes in corneal thickness throughout the day
Q. 15: A 50 year old caucasian male presents with full fields, normal discs, normal nerve fiber layer, no family history of glaucoma, corneal thickness of 560 um and intraocular pressure of 36 mmHg in both eyes. The Ocular Hypertension Treatment Study would predict his risk of developing primary open angle glaucoma as 13% over 5 years. True or False
FALSE
Related Questions

A. The OHTS examined the relationship between IOP, corneal thickness as predictive factors for disease progression

B. The OHTS only looked at patients with untreated IOP between 24 and 32 mmHg.

C. This patient’s risk is probably greater than 13% over 5 years

D. A cornea thinner than 555 um would increase his risk for progression
A. The OHTS examined the relationship between IOP, corneal thickness as predictive factors for disease progression

B. The OHTS only looked at patients with untreated IOP between 24 and 32 mmHg.

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D. A cornea thinner than 555 um would increase his risk for progression

Answer: All
Development of POAG Observation Group

Baseline IOP (mm Hg)

- ≤23.75: 17% (175)
- >23.75 to ≤25.75: 12% (125)
- >25.75: 36% (365)
- >555: 2% (255)
- 555 to ≤588: 9% (95)
- >588: 6% (65)

Q.16: The early manifest glaucoma study found that every 1 mmHg intraocular pressure lowering was associated with a 10% decrease in the risk of field or disc progression

True or False?
TRUE
Related Questions

A. This can be extrapolated to every individual with glaucoma
B. This is true for individuals with untreated mean IOP less than 30 mmHg or no single IOP measurement above 35 mmHg
C. This result might vary dependent upon criteria used for progression
D. The treatment effect in this study varied with initial degree of field loss
A. This can be extrapolated to every individual with glaucoma
B. This is true for individuals with untreated mean IOP less than 30 mmHg or no single IOP measurement above 35 mmHg (T)
C. This result might vary dependent upon criteria used for progression (T)
D. The treatment effect in this study varied with initial degree of field loss
Q. 17: The current Canadian Guidelines for setting target intraocular pressures in the treatment of glaucoma suggest setting a target pressure of less than 12 mmHg in cases of advanced glaucoma. True or False?
FALSE
Related Questions

A. Canadian Guidelines suggest that everyone should have an IOP less than 12 mmHg regardless of their stage of glaucoma

B. Canadian Guidelines suggest that everyone should have an IOP less than 15 mmHg with at least a 30% reduction in IOP from baseline if they have advanced glaucoma

C. Canadian Guidelines suggest an IOP less than 21 mmHg with reduction at least 30% from baseline is reasonable in patients with early glaucoma

D. Guidelines suggest that everyone should have an IOP less than 12 mmHg with at least 30% reduction in IOP from baseline if they have advanced glaucoma
Answer

A. Canadian Guidelines suggest that everyone should have an IOP less than 12 mmHg regardless of their stage of glaucoma
B. Canadian Guidelines suggest that everyone should have an IOP less than 15mmHg with at least a 30% reduction in IOP from baseline if they have advanced glaucoma (T)
C. Canadian Guidelines suggest an IOP less than 21 mmHg with reduction at least 30% from baseline is reasonable in patients with early glaucoma (T)
D. Guidelines suggest that everyone should have an IOP less than 12 mmHg with at least 30% reduction in IOP from baseline if they have advanced glaucoma
Q. 18: Central corneal thickness (CCT) measurement serves as an independent risk factor for glaucomatous progression

True or False?
TRUE
Related Questions

A. OHT patients with thinner corneas have a greater risk of developing functional damage over time
B. A lower target IOP is required if the CCT is abnormally low
C. Subjects with thinner corneas have a greater risk of having a larger cup-to-disk ratio
D. Ocular hypotensive agents lower IOP less in patients with thicker corneas
E. A measured value that represents the viscoelastic properties (‘hysteresis’) of the cornea might be an independent risk factor for glaucomatous progression
Answer

A. OHT patients with thinner corneas have a greater risk of developing functional damage over time (T)
B. A lower target IOP is required if the CCT is abnormally low
C. Subjects with thinner corneas have a greater risk of having a larger cup-to-disk ratio (T)
D. Ocular hypotensive agents lower IOP less in patients with thicker corneas (T)
E. A measured value that represents the viscoelastic properties (‘hysteresis’) of the cornea might be an independent risk factor for glaucomatous progression (T)
Q. 19: Central corneal thickness (CCT) measurements are strongly correlated with anatomical changes in the eye.

True or False?
FALSE
Related Questions

A. Corneal thickness variations are correlated with vascular risk factors in normal tension glaucoma
B. CCT is correlated with lamina cribrosa thickness and thus a susceptibility to glaucomatous damage
C. Patients with thinner corneas are more likely to have an increased axial length
D. Ocular hypertension patients with thinner corneas have significantly thinner retinal nerve fiber layers than OHT patients with thicker corneas and healthy control subjects
Answer

A. Corneal thickness variations are correlated with vascular risk factors in normal tension glaucoma (T)

B. CCT is correlated with lamina cribrosa thickness and thus a susceptibility to glaucomatous damage

C. Patients with thinner corneas are more likely to have an increased axial length

D. Ocular hypertension patients with thinner corneas have significantly thinner retinal nerve fiber layers than OHT patients with thicker corneas and healthy control subjects (T)
Q. 20: One single measurement of central corneal thickness (CCT) is enough
True or False?
FALSE
Related Questions

A. CCT measurements do not vary significantly between different age groups
B. CCT ultrasonic pachymeters vary in accuracy from +/- 1 micron to +/- 50 microns and thus errors in measurement may occur
C. CCT measurements do not show significant variability between visits and over time in the hands of a trained observer and thus one measurement is enough
D. CCT measurements are not significantly affected by contact lens wear
E. A CCT diurnal variation does not occur
Answer

A. CCT measurements do not vary significantly between different age groups (T)
B. CCT ultrasonic pachymeters vary in accuracy from +/- 1 micron to +/- 50 microns and thus errors in measurement may occur (T)
C. CCT measurements do not show significant variability between visits and over time in the hands of a trained observer and thus one measurement is enough
D. CCT measurements are not significantly affected by contact lens wear
E. A CCT diurnal variation does not occur
Q. 21: Selective laser trabeculoplasty (SLT) should replace argon laser trabeculoplasty (ALT) in the treatment of glaucoma

True or False?
FALSE
Related Questions

A. SLT has already replaced ALT in most university centers
B. If a patient fails to respond to ALT, they will likely respond to SLT
C. Due to the lack of focusing requirements, the learning curve for SLT is faster than that for ALT
D. SLT is more likely than ALT to allow for the discontinuation of topical therapy in a patient successfully treated.
Answer: None!!

A. SLT has already replaced ALT in most university centers
B. If a patient fails to respond to ALT, they will likely respond to SLT
C. Due to the lack of focusing requirements, the learning curve for SLT is faster than that for ALT
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Next 3 SLIDES Dr. Tingeey’s…

Where do they go??
Suggested upper limit of initial target IOP range for each eye

N.B. Modify as needed based on longevity, quality of life, risk factors for progression

- **Suspect** in whom clinical decision is made to treat:
  - < 25 mm Hg with at least 20% reduction from baseline

- **Early**:
  - < 21 mm Hg with at least 20% reduction from baseline

- **Moderate**:
  - < 18 mm Hg with at least 30% reduction from baseline

- **Advanced**:
  - < 15 mm Hg with at least 30% reduction from baseline

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Canadian perspectives in glaucoma management: setting target intraocular pressure range.
Staging each eye of a glaucoma patient

• **Suspect** - at least one of the following:
  – IOP above 22 mm Hg (adjusted for pachymetry if available)
  – suspicious disc or C/D asymmetry of > 0.2
  – suspicious 24-2 (or similar) Visual field defect (VFD)

• **Early** - early glaucomatous disc features (eg. C/D < 0.65) and/or mild VFD not within 10 degrees of fixation

• **Moderate** - moderate glaucomatous disc features (eg. C/D 0.7 - 0.85) and/or moderate VFD not within 10 degrees of fixation

• **Advanced** - advanced glaucomatous disc features (eg. C/D > 0.9) and/or VFD within 10 degrees of fixation. Also consider baseline 10-2 visual field (or similar)
HRT: Monitoring Progression

Figure 1. Proportion of study patients showing no progression, progression with scanning laser tomography (SLT) only, conventional perimetry (CP) only, or both SLT and CP.