normal eyes and GFCCS. Quantifying the anatomical variance of the CB and CP in patients with pediatric glaucoma opens opportunity to better understand these disease processes.
Conclusions: UBM can be used to better understand the anatomy of patients with pediatric glaucoma. A better understanding of anatomical and structural changes may help guide therapeutic surgical approaches to these diseases.

048 Combined unilateral recession/resection surgery in the management of esotropia with near-distance disparity. Panagiota Antonopoulou, Mohammad W. Ghaffari, Adam Budd, Anna P. Maino
Introduction: To study the effect of unilateral combined recession/resection surgery in patients with near–distance disparity.
Methods: All children with esotropia and near–distance disparity of at least 14^{Δ} were recruited prospectively. Patients suitable for adjustable surgery or with previous strabismus surgery were excluded from the study. A satisfactory outcome was defined as esotropia of $<10^{\Delta}$ at near and distance, with full cycloplegic referactive correction, and reduction of near-distance disparity to $< 10^{\Delta}$.
Results: 22 patients were enrolled;17 with constant esotropia with accommodative element and 5 with convergence excess, of which 3 had normal AC/A ratio and 1 low. Median age was 7 years (range, 3-16). Mean preoperative angle was $35.4^{\Delta} \pm 11^{\Delta}$ for near and $18.2^{\Delta} \pm 10^{\Delta}$ for distance. Mean near–distance disparity preoperatively was $17.1^{\Delta} \pm 4^{\Delta}$. Two weeks after surgery, near-distance disparity had reduced to $5.8^{\Delta} \pm 5^{\Delta}$. At the final postoperative check (range, 6 – 24 months), mean angle for near was $10 \pm 5^{\Delta}$ and $5.5^{\Delta} \pm 3^{\Delta}$ for distance. Near–distance disparity was $4.5 \pm 4^{\Delta}$. 12 patients (55%) had $<10^{\Delta}$ esotropia at near and the remaining 10 measured between 12^{Δ} and 20^{Δ}.
Discussion: All patients had a satisfactory result for distance and 20 (90%) measured $<10^{\Delta}$ near–distance disparity. Stereopsis was demonstrated in 7 patients. No patients developed distance exotropia or convergence insufficiency.
Conclusions: Unilateral combined recession/resection surgery is a promising technique that addresses the challenge of near–distance disparity without the risk of overcorrection.

049 Pediatric ocular injuries: a 3-year follow-up study of patients presenting to a tertiary care clinic in Canada. Cyril Archambault, Assia Mekliche, Jordan Isenberg, Patrick Hamel, Rosanne Superstein
Introduction: Ocular traumas represent the most common cause of non-congenital blindness in children. Sports or sports equipment related injuries represent a major cause in children over the age of 10. However, activities differ depending on country and climate, suggesting that the mechanisms of trauma may vary according to region.
Methods: A retrospective review of all trauma cases presenting to the eye clinic at CHU Ste Justine, Montreal, Quebec between 2013 and 2015 was conducted.
Results: A total of 409 patients with a mean age of 7.74 years were included. Boys were injured more frequently than girls (60.4%). Most ocular injuries occurred between the ages of 2 and 9 years old (51.8%). The most common sport was soccer, followed by ball/ice hockey. Injuries occurred at home in 23.2% of cases. Final visual acuity was 20/40 or better in 77.0% of patients.
Discussion: This is the second epidemiological study examining causes and outcomes of pediatric ocular traumas in the province of Quebec. In our current sample, soccer was responsible for 33% of sports injuries, while nonorganized hockey for only 20%. This trend is similar to studies done in the UK and could indicate that soccer is increasing in popularity in Canada.
Conclusions: Our demographic findings are comparable with those of the only other Canadian study done on this subject. We are hoping that by identifying high-risk activities, health authorities will be able to plan better prevention strategies thus reducing vision loss and morbidity in the pediatric population.

050 Estimating cycloplegic retinoscopy by school bus accommodation-relaxing skiascopy (SBA-RS). Andrew W. Arnold, Stephanie L. Arnold, Jacob H. Sprano, Robert W. Arnold
Introduction: Accurate estimation of hyperopia as well as astigmatism axis and magnitude are challenging in delayed children. Conventional skiascopy holds rows of increasing power +/− lenses vertically in front of one eye. The SBA-RS child-friendly design holds convex lenses horizontally with a higher plus power fogging over the non-tested eye to relax accommodation.
Methods: In a prospective IRB study, patients had Retinomax autorefraction and SBA-RS refraction as a part of comprehensive pediatric eye examination with cycloplegia using cyclopentolate 1%.
Results: We examined 504 patients (0.3-66 years, mean 7.9 ± 9, median 6 years) of which 124 had delays. For astigmatism >1 D, cylinder power within 1 D of exam was achieved by 93% with SBA-RS and 85% with Retinomax, and axis within 10° in 90% with the bus versus 75% with Retinomax. Hyperopia of >1 D was found in 141; cyclo refraction was $+3.03 \pm 1.8$ D and cyclo-Retinomax 2.85 ± 2.0 D. SBA-RS without cycloplegia was 2.47 ± 1.7 D with neuro-delayed patients 0.36 D less than normals. Spherical equivalent actual refraction (Y) was predicted by SBA-RS (x): $y = 0.98x + 0.12$, $R2 = 0.95$ right eye and $y = 0.99x + 0.17$, $R2 = 0.94$ left eye.
Discussion: Accommodation-relaxing binocular horizontal skiascopy very precisely estimates astigmatism power and axis and only lags cycloplegic refraction by about 0.5 D in hyperopic patients fairly independent of neurodevelopmental delay.
Conclusions: Child-friendly, convex skiascopy can quickly estimate refraction even in many delayed patients reducing the need for cycloplegia.

051 Performance of a photoscreener with novel CR infrared wand strabismus estimation compared to another screening device and comprehensive examination. Stephanie L. Arnold, Andrew W. Arnold, Jacob H. Sprano, Robert W. Arnold
Introduction: The 2WIN photoscreener (Adaptica, Padua, Italy) has a new function, *Corneal Reflex* (CR), utilizing a visible-light occluder transmitting infrared flash so phorias and intermittent tropias can be estimated.
Methods: In a prospective IRB study, pediatric eye patients had pre-cycloplegia 2WIN photoscreening compared with Retinomax and cycloplegic refraction. The (CR) infrared occlusion wand was compared to prism cover test.
Results: Of 436 patients age 0.3 to 66 years: 172 were preschool, 245 school-age and 19 adults. 25% had developmental delays. For astigmatism patients ($>$ 1 D), axis was within 10° of exam in 74% with 2WIN and 78% with Retinomax. In astigmatism patients, 2WIN was within 1 D cylinder power in 81% of 2WIN refractions compared to 85% with Retinomax. For hyperopic ($>$ 1D) patients the 2WIN gave spherical equivalent 1.17 ± 1.02 D and Retinomax 2.21 ± 2.46 D compared to cycloplegic refractions $+3.55 \pm 1.88$ D. The CR strabismus horizontal deviation (y) was related to prism cover (x) with a strong correlation $y = 0.73x - 1.5$, $R2 = 0.65$ ($P < 0.01$). For 182

children (64% with 2003 refractive and strabismic risk factors), 2WIN refraction screen achieved sensitivity, specificity and PPV of 59%, 86%, and 88% while adding CR improved to 69%, 88%, and 91%.
Discussion: 2WIN provided valid estimates of astigmatic power and axis and hyperopia compared to Retinomax in delayed and normal children and adults. The new CR strabismus function reliably estimated prism cover test in horizontal and vertical deviations.
Conclusions: CR wand with 2WIN is useful for community pediatric screening and strabismus clinic.

052 Numeric equivalents for alpha acuities: salvation for EMR research disasters. Robert W. Arnold
Introduction: You are interested to know how much vision improvement happened with your amblyopia care or cataract surgery? Your techs have labored costly hours to meticulously record patient data. Sounds simple, but your electronic medical record (EMR) CANNOT give you the answer. Why not?
Methods: Multiple EMRs were evaluated to determine whether the visual acuity fields (and refraction and motility fields) are either numeric or alpha formatted. Pediatric preverbal vision research and a previous digital conversion were reviewed.
Results: Many prominent EMRs have not formatted visual acuity fields as numeric in part because some adult patients have poor vision characterized as count fingers (CF), hand movement (HM), light projection (LProj), light perception (LP) or no light perception (NLP). Children also have alpha acuities: centered (C), steady (S) and maintained (M). An American and International logMAR paradigm is proposed to simplify digital conversion of typical alpha acuities: CSM (0.44), CS (0.86), C (0.97) in addition to NLP (2.50), LP (2.30), LProj (2.20), HM (2.00), CF (1.70).
Discussion: EMR 'upgrades' may prioritize billing over research, so programmers have defaulted certain data appearance by alpha designating variables that require numeric formats to be analyzable. Reconfiguration of refraction and strabismus field formatting is also needed.
Conclusions: Pediatric ophthalmologists (AAPOS) should lead the effort to scientifically classify infant vision and low vision designations so EMRs have a chance to improve.

053 Long-term outcomes of baerveldt glaucoma implant (BGI) in management of glaucoma following congenital cataract surgery (Gf-CCS). Jane Ashworth, Siddharth Agrawal, Bhamy Hariprasad Shenoy, Susmito Biswas, Cecilia Fenerty
Introduction: Glaucoma is the most common vision threatening complication following congenital cataract surgery. Previous studies have shown Glaucoma Drainage Implants (GDI) to be relatively safe in management of paediatric glaucoma including Gf-CCS. These studies have been limited by small sample size and limited follow-up. Aim of this study was to assess long-term outcomes of BGI in management of Gf-CCS.
Methods: Retrospective interventional case series of children <16 years who underwent BGI for Gf-CCS. Age at cataract surgery <12 months and minimum post-BGI follow-up of 1 year was essential for inclusion.
Results: Forty-seven eyes of 41 patients (6 bilateral, 35 unilateral) were analysed. Mean age at cataract surgery was 10.1 10 weeks. Mean age at glaucoma diagnosis was 16.7 20.3 months. Mean age at BGI surgery was 47.3 55.8 months. 39 eyes were aphakic and 8 were pseudophakic. Mean IOP reduced from 29.96 4.75 mm Hg preoperatively to 15.1 5.15 mm Hg at the last follow-up ($P = 0.000$). Mean no.of glaucoma medication reduced from 2.9 1.02 preoperatively to 0.94 1.04 at the last follow-up ($p = 0.0000$). Mean duration of follow-up was 73.85 56.7 months (range, 12-193 months). One eye developed retinal detachment during the follow-up and resulted in no light perception vision. IOP < 21 mm Hg was maintained in 91.5% eyes at the last follow-up.
Discussion: Current study demonstrates that BGI results in effective control of IOP in children with refractory Gf-CCS. This study benefits from being the largest series with longest mean duration of follow-up.
Conclusions: BGI is a relatively safe and effective procedure for managing Gf-CCS in children and may be considered as the primary intervention in these cases.

054 The value of multiple telephone calls in ensuring follow-up after referral from vision screening. Chase R. Atiga, Connie J. Oh, Richard A. Ulangca, Leila M. Khazaeni, Jennifer A. Dunbar
Introduction: The success of a vision screening program depends on follow-up of referred children for comprehensive exam. This study evaluates the benefit of multiple phone calls to families of children referred from vision screening for scheduling follow-up appointments.
Methods: Families of children referred from vision screening between 9/2015 and 4/2018 were called up to 3 times to provide referrals and confirm follow-up. Children with scheduled appointments were marked 'completed follow-up'. Follow-up confirmation responses were compared according to number of call attempts made. Follow-up nonconfirmation responses for 1st calls, 2nd calls, and consecutive call responses were compared; χ^2 tests were performed for comparisons.
Results: 1928 (62%) referred children reported follow-up. 7102 telephone calls were made. Follow up yield after the 1st call was 25%. Of those children remaining, a 2nd call yielded 29% and a 3rd call 28% ($P = 0.007$). For 1st ($P < 0.001$), 2nd ($P < 0.001$), and consecutive ($P < 0.001$) call response comparisons, the "answered phone, without scheduled appointment" group (n = 116 [66%]; n = 156 [66%]; n = 43 [68%]) had higher follow-up than those "left a message" (n = 397 [36%]; n = 277 [28%]; n = 215 [26%]), which had higher follow-up than the "unable to reach" (n = 32 [18%]; n = 29 [15%]; n = 11 10%]).
Discussion: Improved communication following vision screening reduces barriers to follow-up compliance. In this study, follow-up rates increased with multiple phone calls compared to one phone call. Follow-up rates were higher for families reached by telephone than those for whom messages were left or who were unreachable.
Conclusions: Reaching families by pursuing multiple telephone calls is effective in increasing follow-up rates after vision screening referral.

055 Single lateral rectus resection in adult nonaccommodative esotropia. Vanessa K. Avellaneda-Chevrier, Helen A. Kim, Mrunalini D. Parvataneni
Introduction: One muscle strabismus surgery is typically avoided due to concerns about undercorrection or ocular incomitance. We report the results from a series of patients who underwent single lateral rectus resection to treat a symptomatic moderate angle nonaccommodative esodeviation.
Methods: A retrospective chart review was performed for 19 patients (aged 21-85) who were surgically treated with either a 6.0 mm or 6.5 mm unilateral rectus resection. Patients with esotropia between