Cochrane Library

Cochrane Database of Systematic Reviews

Non-contact methods for the detection of people at risk of primary angle closure glaucoma (Review)

Jindal A, Ctori I, Virgili G, Lucenteforte E, Lawrenson JG, Gordon I

Jindal A, Ctori I, Virgili G, Lucenteforte E, Lawrenson JG, Gordon I.
Non-contact methods for the detection of people at risk of primary angle closure glaucoma.
Cochrane Database of Systematic Reviews 2019, Issue 3. Art. No.: CD012947.
DOI: 10.1002/14651858.CD012947.pub2.

www.cochranelibrary.com

WILEY

TABLE OF CONTENTS

[Diagnostic Test Accuracy Review]

Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Anish Jindal[1], Irene Ctori[1], Gianni Virgili[2], Ersilia Lucenteforte[3], John G Lawrenson[4], Iris Gordon[5]

[1]Division of Optometry and Visual Science, City University London, London, UK. [2]Department of Translational Surgery and Medicine, Eye Clinic, University of Florence, Florence, Italy. [3]Department of Neurosciences, Psychology, Drug Research and Children's Health, University of Florence, Florence, Italy. [4]Centre for Applied Vision Research, School of Health Sciences, City University of London, London, UK. [5]Cochrane Eyes and Vision, ICEH, London School of Hygiene & Tropical Medicine, London, UK

Contact address: John G Lawrenson, Centre for Applied Vision Research, School of Health Sciences, City University of London, Northampton Square, London, EC1V 0HB, UK. j.g.lawrenson@city.ac.uk.

Editorial group: Cochrane Eyes and Vision Group.
Publication status and date: New, published in Issue 3, 2019.

Citation: Jindal A, Ctori I, Virgili G, Lucenteforte E, Lawrenson JG, Gordon I. Non-contact methods for the detection of people at risk of primary angle closure glaucoma. *Cochrane Database of Systematic Reviews* 2019, Issue 3. Art. No.: CD012947. DOI: 10.1002/14651858.CD012947.pub2.

ABSTRACT

There is no abstract. The objectives are as follows:

To determine the diagnostic accuracy of non-contact screening methods for identifying eyes with a narrow angle.

PLAIN LANGUAGE SUMMARY

[Summary title]

[Summary text]

BACKGROUND

Clinical problem

Primary angle closure (PAC) is characterised by appositional or adhesional (synechial) narrowing (and eventually occlusion) of the drainage angle in the anterior chamber of the eye, resulting in elevated intraocular pressure (IOP) and subsequent glaucomatous optic neuropathy, a condition known as primary angle closure glaucoma (PACG). The occlusion of the drainage angle may occur rapidly or slowly. Rapid occlusion results in symptomatic IOP elevation that requires emergency medical treatment (known as acute angle closure). Individuals presenting with acute angle closure, characterised by eye pain, headache, corneal oedema and vas-

cular congestion, are treated initially with topical and oral medications to lower the IOP. This is followed by laser peripheral iridotomy as soon as possible after angle closure, usually with prophylactic treatment of the fellow eye (Emanuel 2014). An occlusion that develops insidiously results in chronically raised IOP, which is often asymptomatic. Management for chronic angle closure involves: medical (topical hypotensives); laser peripheral iridotomy; filtration surgery or a combination of these to lower the IOP and open up the drainage angle. A recently published multicentred randomised controlled trial has provided evidence that clear lens extraction is associated with better clinical and patient-reported outcomes than peripheral iridotomy and may therefore be a better first-line treatment option (Azuara-Blanco 2016).

A recent systematic review found the global prevalence of PACG to be 0.5% of individuals aged 40 to 80 years, and estimated that the number of people with the disease will reach 23.4 million by 2020 and 32 million by 2040 (Tham 2014). Although, globally, open-angle glaucoma is more common (3%) (Tham 2014), PACG is more likely to result in bilateral blindness (Quigley 1996; Resnikoff 2004). PACG accounts for approximately 50% of glaucoma blindness, and it has been estimated that by 2020, 5.3 million people worldwide will be bilaterally blind (Quigley 2006).

A classification scheme for PAC designed for use in prevalence surveys and epidemiological research has been published by Foster and colleagues (Foster 2002). This identifies three stages in the natural history of angle closure from initial irido-trabecular contact (ITC) to anterior segment signs of disease (raised IOP, peripheral anterior synechiae (PAS), or both), culminating in glaucomatous optic neuropathy.

1. PAC suspect (PACS): an eye in which appositional contact between the peripheral iris and posterior trabecular meshwork is considered in two or more quadrants, in dark room conditions using static gonioscopy,
2. PAC: an eye with an occludable drainage angle and features indicating that trabecular obstruction by the peripheral iris has occurred, such as PAS, elevated IOP (> 21 mmHg), iris whorling (distortion of the radially orientated iris fibres), "glaucomfleken" lens opacities or excessive pigment deposition on the trabecular surface. There is no evidence of glaucomatous optic neuropathy or associated glaucomatous field loss.
3. PAC glaucoma (PACG): signs of PAC, as described above, and evidence of glaucomatous optic neuropathy.

It has been estimated that the proportion of PACS that converts to PAC ranges from 10% to 40% per decade (Alsbirk 1992; Thomas 2003; Yip 2008), and the five year risk of progression from PAC to PACG has been reported to be 28% to 30% (Thomas 2003; Wilensky 1993).

There are various anatomical and demographic risk factors for PAC (Congdon 1996; Lowe 1970). Anatomical risk factors include: a shallow anterior chamber depth (ACD), thickening of the crystalline lens, small corneal diameter and a short axial length (Nolan 2006). The risk of PACG increases with age (Day 2012) and the prevalence also varies with ethnicity, with higher rates occurring in Inuit and Asian populations (Clemmesen 1971; Drance 1973; Tham 2014).

Target condition being diagnosed

For this review we will use a narrow angle as the target condition indicative of an anatomical predisposition to angle closure as identified by gonioscopy (Weinreb 2006). In this review we define a narrow angle as either:

- an eye which has appositional contact between the peripheral iris and posterior trabecular meshwork in two or more quadrants (≥180°); or
- an eye with or at risk of angle closure as judged by a trained and experienced eye care professional using gonioscopy with or without indentation.

Conditions that are similar to the target condition include secondary angle closure glaucoma, such as aqueous misdirection, neovascular glaucoma and ciliary body swelling. The clinical features and management of conditions that cause secondary angle closure glaucoma have been reviewed by Parivadhini 2014 and will not be investigated in this review.

Index test(s)

Targeted screening for PAC/PACG has established the effectiveness of measuring anterior chamber dimensions to identify occludable angles (Congdon 1996; Devereux 2000; Kurita 2009). A variety of non-contact methods are available for the assessment of the ACD, anterior chamber angle (ACA), or both.

Flashlight/pen torch/oblique handlight technique

The flashlight test is an accessible screening method if no other equipment is available. The test can be carried out in a primary- or secondary-care setting and involves shining a pen torch into the eye from the temporal limbus parallel to the iris to assess the ACD. Quantitative grading uses a four-point scale, derived from how much the iris is illuminated by the light of the pen torch (grade 4 = iris is fully illuminated; grade 1 = less than one-third of the iris is illuminated) (Van Herick 1969; Vargas 1973)); grade 1 is associated with a high risk of angle closure. Qualitative grading can be used to describe the amount of shadow falling on the iris as shallow, medium or deep, and is further described by He 2007.

Limbal anterior chamber depth assessment (van Herick technique)

The van Herick technique is used to assess the ACD at the limbus using a slit lamp biomicroscope (Van Herick 1969). The illumination system is set at 60° from the observation system. A focused

vertical slit-beam is positioned at the limbus and moved just onto the cornea until the beam separates into a corneal section and reflection of the beam onto the iris. An estimate of the thickness of the dark space between the beams (which corresponds to the limbal anterior chamber depth (LACD)) is recorded as a fraction (or percentage) of the corneal section thickness over the central portion of the beam. Van Herick 1969 originally described a four-point grading scheme, which was extended to a seven-point scale by Foster 2000. Foster 2000 used an intuitive percentage scale, in an effort to improve the precision of the measurement. Van Herick 1969 considered that an eye with a LACD of grade 2 or less required gonioscopy and that a grade 1 angle was at a high risk of angle closure. Foster 2000 further subdivided grade 1 into 5% and 15% cut-off values and found that the augmented scale was associated with an improved test accuracy.

Scanning peripheral anterior chamber depth analysis

Scanning peripheral anterior chamber depth analysis (SPAC) is an objective method for measuring the peripheral and central ACD by automatically taking 21 slit lamp images of the anterior chamber using a 1 mm-wide slit at 0.4-mm intervals from the optical axis towards the limbus (Kashiwagi 2006). These measurements are compared to a normative database and converted into a numerical scale ranging from 1 to 12, with 12 representing the deepest ACD. In addition, the instrument provides a categorical grading of the risk of angle closure, with suspect angle closure indicated by $\geq$ 4 measured points exceeding the 95% confidence interval (CI), potential angle closure indicated by $\geq$ 4 points exceeding the 72% CI, and normal. The device has been shown to be reproducible and easy to operate, therefore making it suitable for use by non-clinicians (Kashiwagi 2004).

Scheimpflug photography

The Scheimpflug principle is used to correct perspective distortion in aerial photographs and has been adapted for ocular imaging. The Oculus Pentacam (Oculus, Wetzlar, Germany) device employs this principle using monochromatic blue light at a wavelength of 475 nm. By rotating the apparatus around the optical axis of the eye, a series of radially oriented images is generated in three dimensions around the 360° extent of the anterior segment. Between 12 and 50 real-time sections from the anterior surface of the cornea to the posterior vertex of the lens are acquired within a 2-s acquisition frame. This generates a set of measurements that provide a detailed description of the biometric configuration of the anterior segment, which includes the ACA, ACD and the anterior chamber volume (ACV). When calculating the ACA, it should be noted that this is not a direct measurement of the ACA, but is extrapolated from the measurements taken by the Pentacam. Some studies have found the ACD to be an effective indicator for the detection of narrow angles using various cut-off ACD values (2.6 mm, 1.93 mm, 2.27 mm) (Hong 2009; Kurita 2009; Rossi 2012). Another study found ACV to partition normal eyes from those at risk of angle closure (Grewal 2011). Currently there is no consensus on which parameter or cut-off value to use in the determination of a narrow angle.

Anterior segment-ocular coherence tomography

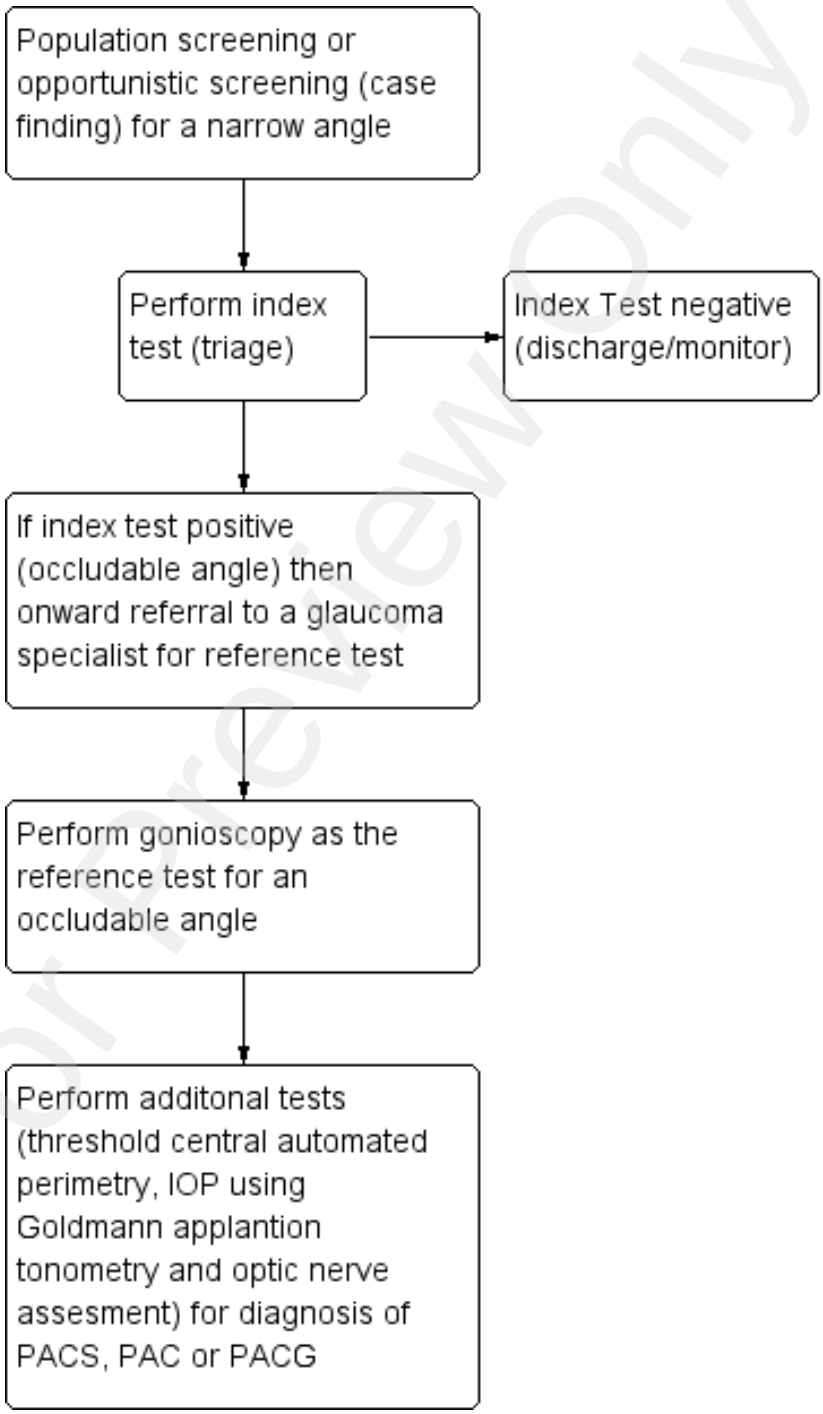
Anterior segment-ocular coherence tomography (AS-OCT) allows both qualitative and quantitative analysis of the angle. The technique is based on low-coherence interferometry whereby the delay and intensity of light reflected from the ocular tissue structures is measured. There are currently several AS-OCT devices available on the market; depending on the device, they use one of the following methods to obtain clinical data: time domain, spectral domain or the more recent swept source domain method. Spectral and swept source domain methods have a higher scan speed and resolution than time domain methods. A wavelength of 1310 nm is used to image the anterior segment and inbuilt software is used to quantitatively assess in detail angle parameters, which include: the trabeculo-iris space area (TISA), angle recess area (ARA) and angle opening distance (AOD) (Quek 2011). Qualitative interpretation has been typically defined by contact between the peripheral iris and any part of the angle wall anterior to the scleral spur. Studies state different AODs of 500 or 750 microns in the detection or diagnosis of narrow angles or an ARA of less than 20° (Smith 2013). There is no current consensus on which values to use with any of the parameters mentioned to identify a narrow angle.

Clinical pathway

A variety of non-contact devices with varying degrees of sophistication have been developed to evaluate the risk of angle closure . The high prevalence of PAC and the burden of blindness attributable to PACG in high-risk populations open up the possibility of using such techniques for population screening (see Figure 1) (Nolan 2003; Nolan 2006). More commonly, non-invasive assessment of the dimensions of the ACD, angle, or both are part of a standard ophthalmic examination in individuals who are asymptomatic or those presenting with symptoms of angle closure. If the index test(s) is positive, such individuals are identified as being 'at risk' of PACG and are referred for further assessment, usually to a glaucoma subspecialist ophthalmologist. The ophthalmologist will carry out gonioscopy (the reference standard for qualitative and quantitative assessment of the ACA). If a narrow angle is diagnosed, additional tests are then performed, such as IOP measurement using Goldmann applanation tonometry, optic nerve head examination and automated threshold visual field testing, to further diagnose the narrow angle as PACS/PAC/PACG. Depending on the clinical presentation, the affected individual may be closely monitored or undergo prophylactic treatment with laser

iridotomy or lens extraction, possibly in conjunction with IOP-lowering eye drops.

Figure 1. Clinical Pathway



Role of index test(s)

The gold standard test to detect a narrow angle is gonioscopy; however, this is not routinely performed outside the specialist setting since it requires a high level of skill, which may lead to missed diagnoses. Non-contact screening tests are relatively quick and can be carried out by appropriately trained healthcare professionals or technicians as a triage test to identify eyes at risk of angle closure. These non-contact tests cannot replace gonioscopy as they do not provide sufficient information on the ACA anatomy (Smith 2013). It should be noted that in some cases, when gonioscopy fails to visualise the anterior chamber configuration and depth, typically in secondary causes of angle closure, AS-OCT and Pentacam imaging can be used to provide objective measurements (Kang 2013). In addition, AS-OCT and Pentacam imaging can be used to supplement existing clinical documentation by providing objective measurements (Smith 2013).

Alternative test(s)

Tests that use contact methods, such as ultrasound biomicroscopy, have been reviewed by Smith 2013, and will not be included in the current review.

Rationale

A systematic review published in 2013 evaluated whether anterior segment imaging (using ultrasound biomicroscopy, ocular coherence tomography (OCT), Scheimpflug photography or SPAC) aided the diagnosis of PAC (Smith 2013). This review included 79 studies and concluded that although anterior segment imaging provided useful information, none of the methods provided sufficient information about the anatomy of ACA to be considered a substitute for gonioscopy. However, no meta-analysis of accuracy data was conducted. The current review will update and extend this review by considering the following non-contact methods of anterior chamber assessment (flashlight test, slit-lamp techniques for limbal and central ACD assessment, AS-OCT, Scheimpflug photography and SPAC).

OBJECTIVES

To determine the diagnostic accuracy of non-contact screening methods for identifying eyes with a narrow angle.

Secondary objectives

1. To asssess and compare the accuracy of index non-contact screening tests for identifying eyes with a narrow angle
2. To investigate the accuracy of each non-contact screening method for detecting the most severe referable condition or PACG (versus PAC, PACS or a non-occludable angle)
3. To explore potential causes of heterogeneity in diagnostic performance

METHODS

Criteria for considering studies for this review

Types of studies

We will include all prospective and retrospective cohort studies ('single-gate' design) and case-control studies ('two-gate' design) that have evaluated the accuracy of non-contact methods for diagnosing narrow angles compared to a gonioscopy reference standard. We will include studies comparing each method separately, and studies comparing more than one method, to the reference standard in the same population. This will include studies in which participants receive all the tests or are randomised to receive different tests. We will include only studies that provide sufficient data to allow the calculation of sensitivity and specificity.

Non-contact methods for the detection of narrow angles are mainly of interest in screening and primary-care settings as a triage test aiming to guide referrals to ophthalmologists. However, since the relative accuracy of these tests in these settings is not well known, we will include studies investigating these tests in any setting, and will assess the effect of this on accuracy in subgroup analyses.

Participants

We will include all participants who meet the inclusion criteria for studies conducted in any setting (including population screening, and primary or secondary care), which evaluated any of the index tests against the reference standard.

Index tests

We will assess non-contact methods including: the flashlight/pen torch/oblique handlight technique, LACD using the van Herick technique, SPAC, Scheimpflug photography and AS-OCT.

Target conditions

A narrow angle, as a referable condition that can include PACS, PAC or PACG, as described above, will be the target condition of interest.

As a secondary objective, we will also extract data to investigate the accuracy of the test for detecting the most severe referable condition or PACG (versus PAC, PACS or non-occludable angle).

Reference standards

Gonioscopy will be the reference standard for the diagnosis of a narrow angle. We will further classify a narrow angle into one of three subgroups PACS, PAC, PACG, if the following measurements have been taken; IOP measurement, visual field assessment and optic disc examination.

Gonioscopy

Gonioscopy is the acknowledged reference standard for the evaluation of eyes with and at risk of angle closure, and should be performed on both eyes in any individual with suspected angle closure. The technique should be performed under dark-room conditions and used in the primary position to visualise angle structures, the presence of ITC, PAS, or both (Bhargava 1973). Dynamic assessment is helpful in distinguishing ITC from PAS using a four-mirror lens, which is applied to the cornea creating pressure with the goniolens. The Shaffer grading system, which records the ACA width in four quadrants, from grade 0 (closed) to grade 4 (wide open), is the most widely adopted ACA classification scheme (Shaffer 1960). Angle morphology can be further described using the Scheie grading system (Scheie 1957). This scheme describes the angle according to the anatomical structures observed (grade IV: Schwalbe's line not visible; grade III: Schwalbe's line visible; grade II: anterior trabecular meshwork visible; grade I: visible scleral spur; and grade 0: ciliary body band visible).

Search methods for identification of studies

Electronic searches

The Cochrane Eyes and Vision Information Specialist will search the following electronic databases. We will impose no language or publication year restrictions.

- Cochrane Central Register of Controlled Trials (CENTRAL; latest issue) (which contains the Cochrane Eyes and Vision Trials Register) in the Cochrane Library (Appendix 1);
- Health Technology Assessment Database (HTAD; latest issue) in the Cochrane Library (Appendix 1);
- MEDLINE Ovid (1946 to present) (Appendix 2);
- Embase Ovid (1980 to present) (Appendix 3);
- BIOSIS (January 1969 to present) (Appendix 4);
- System for Information on Grey Literature in Europe (OpenGrey) (1995 to present) (Appendix 5);
- Aggressive Research Intelligence Facility database (ARIF) (www.birmingham.ac.uk/research/activity/mds/projects/HaPS/PHEB/ARIF/index.aspx) (Appendix 6);
- ISRCTN registry (www.isrctn.com/editAdvancedSearch) (Appendix 7);
- US National Institutes of Health Ongoing Trials Register - ClinicalTrials.gov (www.clinicaltrials.gov) (Appendix 8);
- World Health Organization International Clinical Trials Registry Platform (www.who.int/ictrp) (Appendix 9).

Searching other resources

We will search the references of included studies for information about further studies. We do not intend to handsearch journals and conference proceedings.

Data collection and analysis

Selection of studies

Two review authors (AJ and IC) will independently assess the titles and abstracts of all studies identified by the electronic searches. We will label each record at this stage as "definitely relevant", "possibly relevant" or "definitely not relevant". We will exclude records labelled as "definitely not relevant" by both review authors. We will retrieve full-text reports of records labelled as "definitely relevant" or "possibly relevant" and the two review authors will independently assess whether these meet the inclusion criteria. We will resolve any disagreement when present at any stage through discussion. When necessary, we will consult a third review author or contact the study investigators for more information to determine eligibility.

Data extraction and management

Two review authors (AJ and JL) will independently extract the following data, where possible, from the included studies: the number of true positives (TP), false positives (FP), true negatives (TN) and false negatives (FN) using 2 x 2 contingency tables. From the 2 X 2 tables we will calculate sensitivity (the proportion of diseased people correctly diagnosed) and specificity (the proportion of non-diseased people correctly diagnosed) with 95% CIs.

One review author will enter data into Review Manager 5 (RevMan 5) (Review Manager 2014) and a second review author will verify the entered data. We will resolve any disagreement when present at any stage through discussion. We will contact study investigators to provide missing information or to clarify data, and we will allow two weeks for a response. If we do not receive a response during this time, we will proceed using the information available, as provided

in the published reports. We will summarise the characteristics of included studies in a 'Characteristics of included studies' table, as shown below. See Appendix 10 for abbreviations.

Study identification	**First author, year of publication.**
Clinical features and settings	Previous testing and clinical setting including country where the study was conducted. Presentation at recruitment, prior treatment that would affect the ACD (i.e. peripheral iridotomy, iridoplasty, etc.)
Participants	Sample size, age, sex, ethnicity and country
Study design	Whether the sample was selected as a single group (consecutive series) or as separate groups with and without the target condition (case-control). Whether participants were consecutively enrolled in the study and were identified retrospectively or prospectively. Training involved for index tests, both eyes included in the study
Target condition	A narrow angle as a referable condition, which includes PACS, PAC and PACG
Reference standard	The reference standard test used: gonioscopy for diagnosing a narrow angle; this is acceptable if this is the only target condition in large-scale screening or primary-care settings. Gonioscopy combined with tonometry, visual fields investigation and optic disc assessment for distinguishing the relative subgroup of participants with a narrow angle PACS/PAC/PACG
Index tests	Flashlight/pen torch/oblique handlight technique: grade recorded LACD using the van Herick technique: van Herick grade, or percentage, or both SPAC: numerical or categorical grade, or both Pentacam Scheimpflug photography: ACA, ACV and ACD AS-OCT: model of OCT device, manufacturer and any technical characteristics (e.g. software analyses). TISA, ARA, AOD 500 microns and 750 microns for each parameter
Follow up	Numbers of participants lost to follow-up or who had uninterpretable test results
Notes	Source of funding, anything else of relevance

Assessment of methodological quality

Two review authors will independently assess each included study for risk of bias using the QUADAS 2 tool to assess the susceptibility to bias of the included studies, based on guidance presented in Table 1 (Whiting 2011). We will assess each study and judge each bias criterion to be at 'high', 'low' or 'unclear' risk of bias (lack of information or uncertainty over the potential for bias). Concerns regarding applicability will be rated as 'high', 'low' or 'unclear' concerns.

Statistical analysis and data synthesis

We aim to extract and analyse the data available at fixed thresholds for each index test, in order to ease the interpretability of our summary measures of accuracy. Our preferred thresholds will be:

- flashlight/pen torch/oblique handlight technique: grades 1 and 2;
- LACD using the van Herick technique: van Herick grades 1 and 2 (percentages will be converted to grades as appropriate);
- SPAC: categorical grading of suspect angle closure or potential angle closure, as provided by the device.

As there is no current consensus regarding thresholds for Pentacam Scheimpflug photography and AS-OCT, we will extract these data, if available, from the included studies.

If we identify sufficient studies providing data at fixed thresholds for each test, we will fit a bivariate model using the METADAS macro in SAS. If fixed thresholds are sparsely or incompletely reported in studies we will fit hierarchical summary receiver operating characteristic (HSROC) curve models using the same software. For comparisons between index tests, we will use a covariate coding for each test in the bivariate or HSROC model. If the HSROC model is appropriate, we will assume the same shape for a summary receiver operating characteristic (sROC) curve for all index tests and we will compare them using relative diagnostic odds ratio (DOR). We will also report estimates of test accuracy, such as sensitivity values at 90% and 95% specificity, which are useful measures of the performance screening test.

We will assess and compare the accuracy of different index tests using all available studies, thus allowing for indirect comparisons. As Takwoingi 2013 showed that direct comparisons conducted within each study are more reliable than indirect comparisons, we will also present such within-study comparisons graphically in ROC plots. We will plot data points and join the two estimates (one for each test) from each study by a line to show the difference in accuracy between tests. If a sufficient number of such paired studies are available, we will pool them in bivariate or HSROC meta-analyses, as appropriate, and test their relative accuracy with a covariate coding for each test using the methods described above.

Since narrow angles are often bilateral, this complication may result in unit of analysis issues. We will include studies that evaluated only one eye of each participant or, in participants with two affected eyes, studies that randomly selected only one eye. We will also include studies that included both eyes in our review, but we will acknowledge the unit of analysis issue when formulating our conclusions (i.e. acknowledging the overestimate of the precision in accuracy).

Investigations of heterogeneity

We will initially investigate any heterogeneity in sensitivity and specificity through the visual inspection of forest plots and the degree to which individual study results lie close to the summary ROC curve. For diagnostic tests with a sufficient number of eligible studies, we plan to formally explore heterogeneity by using the following study-level covariates:

- study design (e.g. single-gate and two-gate designs);
- diagnostic reference thresholds (gonioscopy grading (e.g. number of quadrants occluded));
- characteristics of the study population (e.g. high versus low prevalence, ethnicity).

Sensitivity analyses

If we identify sufficient studies, we will perform a sensitivity analysis to assess the impact of risk of bias on test accuracy by repeating the analysis after removing studies at high risk of bias.

ACKNOWLEDGEMENTS

Cochrane Eyes and Vision (CEV) have created the electronic search strategies. We thank Gemma Rossi for her comments on this protocol and Anupa Shah, Managing Editor for CEV for her help throughout the editorial process.

REFERENCES

References to studies included in this review

Alonso 2010 *{published data only}*
* Alonso RS, Ambrosio Junior R, Paranhos Junior A, Sakata LM, Ventura MP. Glaucoma anterior chamber morphometry based on optical Scheimpflug images. *Arquivos Brasileiros de Oftalmologia* 2010;**73**(6):497–500.

Andrews 2012 *{published data only}*
* Andrews J, Chang DS, Jiang Y, He M, Foster PJ, Munoz B, Kashiwagi, K, Friedman DS. Comparing approaches to screening for angle closure in older Chinese adults. *Eye* 2012;**26**(1):96.

Ashaye 2003 *{published data only}*
* Ashaye AO. Use of limbal and central anterior chamber depth measurements in detecting eyes with gonioscopically occludable angles and primary angle closure glaucoma in Ibadan. *African Journal of Medicine and Medical Sciences* 2003;**32**(4):413–6.

Baskaran 2007 *{published data only}*
* Baskaran M, Oen FT, Chan YH, Hoh ST, Ho CL, Kashiwagi K, Foster PJ, Aung T. Comparison of the scanning peripheral anterior chamber depth analyzer and the modified van Herick grading system in the assessment of angle closure. *Ophthalmology* 2007;**114**(3):501–506.

Baskaran 2012 *{published data only}*
* Baskaran M, Aung T, Friedman DS, Tun TA, Perera SA. Comparison of EyeCam and anterior segment optical coherence tomography in detecting angle closure. *Acta Ophthalmologica* 2012;**90**(8):e621–5.

Baskaran 2013 *{published data only}*
* Baskaran M, Ho SW, Tun TA, How AC, Perera SA, Friedman DS, et al. Assessment of circumferential angle-closure by the iris-trabecular contact index with swept-source optical coherence tomography. *Ophthalmology* 2013; **120**(11):2226–31.

Campbell 2015 *{published data only}*

* Campbell, P, Redmond T, Agarwal, R, Marshall, LR, Evans BJW. Repeatability and comparison of clinical techniques for anterior chamber angle assessment. *Ophthalmic and Physiological Optics* 2015;**35**(2):170–178.

Chang 2011 *{published data only}*

* Chang DS, Sakata LM, Aung T, He MG, Lavanya R, Kashiwagi K, et al. Single versus sequential testing with scanning peripheral anterior chamber depth analyser, IOLMaster and anterior segment optical coherence tomography for the detection of narrow angles. *The British Journal of Ophthalmology* 2011;**95**(10):1410–4.

Congdon 1996 *{published data only}*

* Congdon NG, Quigley HA, Hung PT, Wang TH, Ho TC. Screening techniques for angle-closure glaucoma in rural Taiwan. *Acta Ophthalmologica Scandinavica* 1996;**74** (2):113–119.

Dabasia 2015 *{published data only}*

* Dabasia PL, Edgar DF, Murdoch IE, Lawrenson JG. Non-contact screening methods for the detection of narrow anterior Chamber angles. *Investigative Ophthalmology & Vision Science* 2015;**56**:3929-3935.

Foster 2000 *{published data only}*

* Foster PJ, Devereux JG, Alsbirk PH, Lee PS, Uranchimeg D, Machin D, et al. Detection of gonioscopically occludable angles and primary angle closure glaucoma by estimation of limbal chamber depth in Asians: modified grading scheme. *British Journal of Ophthalmology* 2000;**84**(2):186–92.

Gracitelli 2014 *{published data only}*

* Gracitelli CP, Landgren B, Graciani FB, Sousa AK, Paranhos A Jr, Prata TS. Ability of non-ophthalmologist doctors to detect eyes with occludable angles using the flashlight test. *International Ophthalmology* 2014;**34**(3): 557–61.

Grewal 2011 *{published data only}*

* Grewal DS, Brar GS, Jain R, Grewal SP. Comparison of Scheimpflug imaging and spectral domain anterior segment optical coherence tomography for detection of narrow anterior chamber angles. *Eye* 2011;**25**(5):603–11.

He 2007 *{published data only}*

* He M, Huang W, Friedman DS, Wu C, Zheng Y, Foster PJ. Slit lamp-simulated oblique flashlight test in the detection of narrow angles in Chinese eyes: the Liwan eye study. *Investigative Ophthalmology & Visual Science* 2007;**48** (12):5459–63.

Hong 2009 *{published data only}*

* Hong S, Yi JH, Kang SY, Seong GJ, Kim CY. Detection of occludable angles with the Pentacam and the anterior segment optical coherence tomography. *Yonsei Medical Journal* 2009;**50**(4):525–8.

Khor 2010 *{published data only}*

* Khor WB, Sakata LM, Friedman DS, Narayanaswamy A, Lavanya R, Perera SA, et al. Evaluation of scanning protocols for imaging the anterior chamber angle with anterior segment-optical coherence tomography. *Journal of Glaucoma* 2010;**19**(6):365–8.
Sakata, LM, Lavanya R, Friedman DS, Aung HT, Gao H, Kumar RS, Foster PJ, Aung T. Comparison of gonioscopy and anterior segment ocular coherence tomography in detecting angle closure in different quadrants of the anterior chamber angle. *Ophthalmology* May 2008;**115**(5):769–74.

Kim 2014 *{published data only}*

* Kim YK, Yoo BW, Kim HC, Aung T, Park KH. Relative lens vault in subjects with angle closure. *BMC Ophthalmology* 2014;**14**:93.

Ko 2015 *{published data only}*

* Ko YC, Liu CJ, Hsu WM, Cheng CY, Kuang TM, Chou P. Determinants and characteristics of angle-closure disease in an elderly Chinese population. *Ophthalmic Epidemiology* 2015;**22**(2):109–15.

Kurita 2009 *{published data only}*

* Kurita N, Mayama C, Tomidokoro A, Aihara M, Araie M. Potential of the Pentacam in screening for primary angle closure and primary angle closure suspect. *Journal of Glaucoma* 2009;**18**(7):506–12.

Lavanya 2008 *{published data only}*

* Lavanya R, Foster PJ, Sakata LM, Friedman DS, Kashiwagi K, Wong TY, et al. Screening for narrow angles in the Singapore population: evaluation of new non-contact screening methods. *Ophthalmology* 2008;**115**(10):1720-7, 1727.e1-2.

Melese 2016 *{published data only}*

* Melese EK, Chan JD, Blieden LS, Chuang AZ, Baker LA, Bell NP, et al. Determination and Validation of Thresholds of Anterior Chamber Parameters by Dedicated Anterior Segment Optical Coherence Tomography. *American Journal of Ophthalmology* 2016;**169**:208–17.

Narayanaswamy 2010 *{published data only}*

* Narayanaswamy A, Sakata LM, He MG, Friedman DS, Chan YH, Lavanya R, et al. Diagnostic performance of anterior chamber angle measurements for detecting eyes with narrow angles: an anterior segment OCT study. *Archives of Ophthalmology* 2010;**128**(10):1321–7.

Nolan 2006 *{published data only}*

* Nolan WP, Aung T, Machin D, Khaw PT, Johnson GJ, Seah SK, et al. Detection of narrow angles and established angle closure in Chinese residents of Singapore: potential screening tests. *American Journal of Ophthalmology* 2006; **141**(5):896–901.

Nolan 2007 *{published data only}*

Nolan WP, See J, Aung T, Ce Z, Radhakrishnan S, Friedman DS, Smith SD, Chew PT. Detection of patients at risk of angle-closure using anterior segment OCT. Investigative Ophthalmology & Visual Science. Vol. 46:S145.
* Nolan WP, See JL, Chew PT, Friedman DS, Smith SD, Radhakrishnan S, et al. Detection of primary angle closure using anterior segment optical coherence tomography in Asian eyes. *Ophthalmology* 2007;**114**(1):33–9.

Nongpiur 2011 *{published data only}*

* Nongpiur ME, He M, Amerasinghe N, Friedman DS, Tay WT, Baskaran M, et al. Lens vault, thickness, and position in Chinese subjects with angle closure. *Ophthalmology* 2011;**118**(3):474–9.

Okabe 1991 *{published data only}*

* Okabe I, Tomita G, Sugiyama K, Taniguchi T. An epidemiological study on the prevalence of the narrow chamber angle in Japanese. *Journal of Japanese Ophthalmological Society* 1991;**95**:279–287.

Park 2011 *{published data only}*

* Park SB, Sung KR, Kang SY, Jo JW, Lee KS, Kook MS. Assessment of narrow angles by gonioscopy, Van Herick method and anterior segment optical coherence tomography. *Japanese Journal of Ophthalmology* 2011;**55**(4): 343–50.

Radhakrishnan 2005 *{published data only}*

Goldsmith JA, Radhakrishnan S, Westphal V, Huang D, Dueker DK, Rollins AM, Izatt JA, Smith SD. Comparison of Optical Coherence Tomography and Ultrasound Biomicroscopy in Identifying Anatomically Narrow Angles. *ARVO Annual Meeting Abstract Search and Program Planner* 2002:287.

* Radhakrishnan S, Goldsmith J, Huang D, Westphal V, Dueker DK, Rollins AM, et al. Comparison of optical coherence tomography and ultrasound biomicroscopy for detection of narrow anterior chamber angles. *Archives of Ophthalmology* 2005;**123**(8):1053–9.

Rossi 2012 *{published data only}*

* Rossi GC, Scudeller L, Delfino A, Raimondi M, Pezzotta S, Maccarone M, et al. Pentacam sensitivity and specificity in detecting occludable angles. *European Journal of Ophthalmology* 2012;**22**(5):701–8.

Sakata 2010 *{published data only}*

* Sakata LM, Wong TT, Wong HT, Kumar RS, Htoon HM, Aung HT, et al. Comparison of Visante and slit-lamp anterior segment optical coherence tomography in imaging the anterior chamber angle. *Eye* 2010;**24**(4):578–87.

Tan 2012 *{published data only}*

Tan G, Li J, He MG, Sakata LM, Friedman DS, Aung, T. Diagnostic performance of novel morphological parameters for the screening of narrow angles. *Proceedings of Singapore Healthcare* June 2010;**19**:S241.

* Tan GS, He M, Zhao W, Sakata LM, Li J, Nongpiur ME, et al. Determinants of lens vault and association with narrow angles in patients from Singapore. *American Journal of Ophthalmology* 2012;**154**(1):39–46.

Thomas 1996 *{published data only}*

* Thomas R, George T, Braganza A, Muliyil J. The flashlight test and van Herick's test are poor predictors for occludable angles. *Australian and New Zealand Journal of Ophthalmology* 1996;**24**(3):251–6.

Tun 2017 *{published data only}*

* Tun TA, Baskaran M, Tan SS, Perera SA, Aung T, Husain R. Evaluation of the Anterior Segment Angle-to-Angle Scan of Cirrus High-Definition Optical Coherence Tomography and Comparison With Gonioscopy and With the Visante OCT. *Investigative Ophthalmology & Visual Science* 2017;**58** (1):59–64.

Wirbelauer 2005 *{published data only}*

* Wirbelauer C, Karandish A, Haberle H, Pham DT. Non-contact goniometry with optical coherence tomography. *Archives of Ophthalmology* 2005;**123**(2):179–85.

Wong 2009 *{published data only}*

* Wong HT, Chua JL, Sakata LM, Wong MH, Aung HT, Aung T. Comparison of slitlamp optical coherence tomography and scanning peripheral anterior chamber depth analyzer to evaluate angle closure in Asian eyes. *Archives of Ophthalmology* 2009;**127**(5):599–603.

Wong 2009a *{published data only}*

* Wong HT, Lim MC, Sakata LM, Aung HT, Amerasinghe N, Friedman DS, et al. High-definition optical coherence tomography imaging of the iridocorneal angle of the eye. *Archives of Ophthalmology* 2009;**127**(3):256–60.

Wu 2011 *{published data only}*

* Wu RY, Nongpiur ME, He MG, Sakata LM, Friedman DS, Chan YH, et al. Association of narrow angles with anterior chamber area and volume measured with anterior-segment optical coherence tomography. *Archives of Ophthalmology* 2011;**129**(5):569–74.

Yu 1995 *{published data only}*

* Yu Q, Xu J, Zhu S, Liu, Q. A role of oblique flashlight test in screening for primary angle closure glaucoma.. *Eye Science* 1995;**4**:177–179.

Zhang 2014 *{published data only}*

Zhang Y, Li S, Wang, N. Screening efficiency of scanning peripheral anterior chamber depth analyzer for occludable angle-Handan Eye Study. [Chinese]. *Chinese Journal of Experimental Ophthalmology* 10 March 2015;**33**(3): 259–262.

* Zhang Y, Li SZ, Li L, Thomas R, Wang NL. The Handan Eye Study: comparison of screening methods for primary angle closure suspects in a rural Chinese population. *Ophthalmic Epidemiology* 2014;**21**(4):268–75.

References to studies excluded from this review

Adegbehingbe 2007 *{published data only}*

* Adegbehingbe BO, Majengbasan TO. Ocular health status of rural dwellers in south-western Nigeria. *The Australian journal of rural health* 2007;**15**(4):269–72.

Alsbirk 1973 *{published data only}*

* Alsbirk PH, Forsius H. Anterior chamber depth in Eskimos from Greenland, Canada (Igloolik) and Alaska (Wainwright). A preliminary report. *Canadian Journal of Ophthalmology* 1973;**8**(2):265–9.

Alsbirk 1982 *{published data only}*

* Alsbirk PH. Anterior chamber depth, genes and environment. A population study among long-term Greenland Eskimo immigrants in Copenhagen. *Acta Ophthalmologica* 1982;**60**(2):223–4.

Alsbirk 1986 *{published data only}*

* Alsbirk PH. Limbal and axial chamber depth variations. A population study in Eskimos. *Acta Ophthalmologica* 1986; **64**(6):593–600.

Alsbirk 1988 *{published data only}*

* Alsbirk PH. Early detection of primary angle-closure glaucoma. Limbal and axial chamber depth screening in a high risk population (Greenland Eskimos). *Acta Ophthalmologica* 1988;**66**(5):556–64.

Alsbirk 1992 *{published data only}*

* Alsbirk PH. Anatomical risk factors in primary angle-closure glaucoma. A ten year follow up survey based on limbal and axial anterior chamber depths in a high risk population. *International Ophthalmology* 1992;**16**(4-5): 265–72.

Alsbirk 1994 *{published data only}*

* Alsbirk PH. Anatomical risk factors of angle-closure glaucoma. A 10-year study of limbal and axial anterior chamber depths in a risk population. *Ugeskrift for Laeger* 1994;**156**(36):5117–21.

Bai 2005 *{published data only}*

* Bai ZL, Ren BC, Yan JG, He Y, Chen L, Sun NX. Epidemiology of primary angle-closure glaucoma in a rural population in Shaanxi Province of China. *Internation journal of ophthalmology* 2005;**5**(5):872–80.

Baskaran 2015 *{published data only}*

* Baskaran M, Iyer JV, Narayanaswamy AK, He Y, Sakata LM, Wu R, et al. Anterior Segment Imaging Predicts Incident Gonioscopic Angle Closure. *Ophthalmology* 2015; **122**(12):2380–4.

Bhartiya 2013 *{published data only}*

* Bhartiya S, Shaarawy T. Evaluation of the Van Herick Technique for Screening for Occludable Angles in an African Population. *Journal of Current Glaucoma Practice* 2013;**7**(2):88–90.

Bonomi 2000 *{published data only}*

* Bonomi L, Marchini G, Marraffa M, Bernardi P, De Franco I, Perfetti S, et al. Epidemiology of angle-closure glaucoma: prevalence, clinical types, and association with peripheral anterior chamber depth in the Egna-Neumarket Glaucoma Study. *Ophthalmology* 2000;**107**(5):998–1003.

Bosem 1992 *{published data only}*

* Bosem ME, Morsman D, Lusky M, Weinreb RN. Reproducibility of quantitative anterior chamber angle measurements with Scheimpflug video imaging. *Journal of Glaucoma* 1992;**1**(4):254–7.

Bourne 2010 *{published data only}*

* Bourne RRA, French KA, Chang L, Borman AD, Hingorani M, Newsom WD. Can a community optometrist-based referral refinement scheme reduce false-positive glaucoma hospital referrals without compromising quality of care? the community and hospital allied network glaucoma evaluation scheme (CHANGES). *Eye* 2010;**5**: 881–887.

Chong 2013 *{published data only}*

* Chong RS, Sakata LM, Narayanaswamy AK, Ho SW, He M, Baskaran M, et al. Relationship between intraocular pressure and angle configuration: an anterior segment OCT study. *Investigative ophthalmology & visual science* 2013;**54** (3):1650–5.

Chong 2016 *{published data only}*

* Chong GT, Wen JC, Su DH, Stinnett S, Asrani S. Ocular Biometrics of Myopic Eyes With Narrow Angles. *Journal of Glaucoma* 2016;**25**(2):140–4.

Chuka-Okosa 2005 *{published data only}*

* Chuka-Okosa CM, Faal HB, Ogunro A, Duke R. Types of Glaucoma and recent trends applied in treatment: Observations from a Glaucoma Training Workshop in the Gambia. *Nigerian Postgraduate Medical Journal* 2005;**12**(3): 203–9.

Chung 1995 *{published data only}*

* Chung HS, Hong YJ, Choi CM. The depth of the anterior chamber in primary angle closure glaucoma. ARVO Annual Meeting Abstract Search and Program Planner. 1995; Vol. 36, issue 4:S564.

Congdon 1999 *{published data only}*

* Congdon NG, Spaeth GL, Augsburger J, Klancnik J Jr, Patel K, Hunter DG. A proposed simple method for measurement in the anterior chamber angle: biometric gonioscopy. *Ophthalmology* 1999;**106**(11):2161–7.

Dandona 2001 *{published data only}*

* Dandona L, Dandona R, Mandal P, Shields MB. Angle-closure glaucoma in an urban population in southern India. *Evidence Based Eye Care* 2001;**2**(2):108–9.

Dawczynski 2007 *{published data only}*

* Dawczynski J, Koenigsdoerffer E, Augsten R, Strobel J. Anterior optical coherence tomography: a non-contact technique for anterior chamber evaluation. *Graefes Archive for Clinical & Experimental Ophthalmology* 2007;**245**(3): 423–5.

Drance 1973 *{published data only}*

* Drance SM, Morgan RW, Bryett J, Fairclough M. Anterior chamber depth and gonioscopic findings among the Eskimos and Indians in the Canadian Arctic. *Canadian Journal of Ophthalmology* 1973;**8**(2):255–9.

Foo 2011 *{published data only}*

* Foo LL, Nongpiur ME, He M, Allen JC Jr, Wu R, Zheng Y, et al. Novel Prediction Model for Angle Width in Chinese Singaporeans. ARVO Annual Meeting Abstract Search and Program Planner. 2011; Vol. 2011:3064.

Foo 2012 *{published data only}*

* Foo LL, Nongpiur ME, Allen JC, Perera SA, Friedman DS, He M, et al. Determinants of angle width in Chinese Singaporeans. *Ophthalmology* 2012;**119**(2):278–82.

Forsius 1991 *{published data only}*

* Forsius H, Fellman J, Eriksson A. Anterior chamber depth in Arctic and tropical populations. *Arctic Medical Research* 1991;**Suppl**:505–8.

Friedman 2008 *{published data only}*

* Friedman DS, Gazzard G, Min CB, Broman AT, Quigley H, Tielsch J, et al. Age and sex variation in angle findings among normal Chinese subjects: a comparison of UBM, Scheimpflug, and gonioscopic assessment of the anterior chamber angle. *Journal of Glaucoma* 2008;**17**(1):5–10.

Guo 2015 *{published data only}*

* Guo JM, Xu XL, Zhang H, Wang JM. Comparison of anterior segment parameters between fellow eyes of unilateral acute angle closure glaucoma and primary angle closure suspects. [Chinese]. *International Eye Science* 2015; **15**(4):650–3.

Hadziahmetovic 2014 *{published data only}*

* Hadziahmetovic M, Williamson K, Lehman AY, Ackert JM. Higher than expected prevalence of glaucoma in community centered practice. ARVO Annual Meeting Abstract Search and Program Planner. 2014; Vol. 55 (13): 4271.

He 2012 *{published data only}*

* He Y, Baskaran M, Tun TA, Narayanaswamy AK, Aung T. Proceedings of Singapore Healthcare. March 2012; Vol. 21:S136.

Kalev-landoy 2007 *{published data only}*

* Kalev-landoy M, Day AC, Cordeiro MF, Migdal C. Optical coherence tomography in anterior segment imaging. *Acta Ophthamologica Scandinavica* 2007;**85**(4):427–30.

Kashiwagi 2006 *{published data only}*

* Kashiwagi K, Kashiwagi F, Hiejima Y, Tsukahara S. Finding cases of angle-closure glaucoma in clinic setting using a newly developed instrument. *Eye* 2006;**20**(3): 319–24.

Kashiwagi 2013 *{published data only}*

* Kashiwagi K, Chiba T, Mabuchi F, Furuya T, Tsukahara S. Five-year incidence of angle closure among glaucoma health examination participants. *Graefes Archive for Clinical & Experimental Ophthalmology* 2013;**251**(4):1219–28.

Khalil 1975 *{published data only}*

* Khalil AA, Al-Hussaini MK, Abboud I A, Wasfy IA. Anterior chamber depth measurements in normal eyes and in eyes involved with primary glaucoma in Assiut. *Bulletin of the Ophthalmological Society of Egypt* 1975;**68**:143–63.

Kim 2012 *{published data only}*

* Kim SH, Kang JH, Park KH, Hong C. Hong's grading for evaluating anterior chamber angle width. *Japanese Journal of Ophthalmology* 2012;**56**(6):551–8.

Kochupurakal 2016 *{published data only}*

* Kochupurakal RT, Srikanth K, Jha KN, Rajalakshmi AR, Nagarajan S, Ezhumalai G. Role of Optical Coherence Tomography in Assessing Anterior Chamber Angles. *Journal of clinical and diagnostic research : JCDR* 2016;**10** (4):NC18–20.

Leung 2010 *{published data only}*

* Leung CK, Palmiero PM, Weinreb RN, Li H, Sbeity Z, Dorairaj S, et al. Comparisons of anterior segment biometry between Chinese and Caucasians using anterior segment optical coherence tomography. *British Journal of Ophthalmology* 2010;**94**(9):1184–9.

Li 2014 *{published data only}*

* Li H, Zhang YY, Liu SC, He XG, Li CJ, Li CH, et al. Prevalence of open-angle glaucoma in southwestern China: the Yongchuan Glaucoma study. *Journal of Huazhong University of Science and Technology. Medical Sciences* 2014; **34**(1):137–41.

Liu 2011 *{published data only}*

* Liu D, Baskaran M, Nongpiur ME, Friedman DS, Aung T. Can Anterior Segment OCT Detect Angle Closure Earlier Than Gonioscopy?. ARVO Annual Meeting Abstract Search and Program Planner. 2011; Vol. 2011:6281.

Lu 1980 *{published data only}*

* Lu DP. Examination of peripheral chamber depth in mass screening for glaucoma, with special reference to early angle-closure glaucoma. [Chinese]. *Chinese Journal of Ophthalmology* 1980;**16**(3):204–5.

Mani 2014 *{published data only}*

* Mani B, Yau C, Ho SW, Tun TA, Perera S, Aung T. Comparison of time domain anterior segment OCT with swept source OCT for angle closure imaging. ARVO Annual Meeting Abstract Search and Program Planner. 2014; Vol. 55 (13):932.

Matonti 2011 *{published data only}*

* Matonti F, Hoffart L, Ridings B, Conrath J. Dynamic Gonioscopy Using Optical Coherence Tomography. ARVO Annual Meeting Abstract Search and Program Planner. 2011; Vol. 2011:6649.

Melese 2015 *{published data only}*

* Melese E, Chuang A, Baker L, Blieden L, Bell N, Feldman R. Sensitivity, Specificity, and Optimal Thresholds of Anterior Chamber Angle (ACA) Parameters Measured by Anterior Segment Optical Coherence Tomography (AS-OCT) in Determination of Open Versus Closed Angles. Investigative Ophthalmology & Visual Science. Vol. 56, issue 7:4998–4998.

Moghimi 2015 *{published data only}*

* Moghimi S, Ramezani F, He M, Coleman AL, Lin SC. Comparison of Anterior Segment-Optical Coherence Tomography Parameters in Phacomorphic Angle Closure and Acute Angle Closure Eyes. *Investigative Ophthalmology & Visual Science* 2015;**56**(13):7611–7.

Moghimi 2017 *{published data only}*

* Moghimi S, Kiaroudi M, Coh P, Li Y, He M, Lin SC. Comparison of Anterior Chamber Parameters in Patients With Plateau Iris Configuration and Pupillary Block Using AS-OCT. *Journal of Glaucoma* 2017;**26**(2):153–8.

Moreno-Montanes 1992 *{published data only}*

* Moreno-Montanes J, Alvarez A, Alcolea A, Marcos JM. The central depth of the anterior chamber as a predictive factor of primary angle-closure glaucoma.. *Glaucoma* 1992; **14**(4):115–9.

Mosler 2015 *{published data only}*

* Mosler MP, Werner JU, Lang GK. Chamber Angle Assessment in Clinical Practice - A Comparison between

Optical Coherence Tomography and Gonioscopy. *Klinische Monatsblatter fur Augenheilkunde* 2015;**232**(7):874–80.

Narayanaswamy 2013 ***{published data only}***

* Narayanaswamy A, Baskaran M, Zheng Y, Lavanya R, Wu R, Wong W L, et al. The prevalence and types of glaucoma in an urban Indian population: the Singapore Indian Eye Study. *Investigative Ophthalmology & Visual Science* 2013; **54**(7):4621–7.

Ni 2014 ***{published data only}***

* Ni Ni S, Tian J, Marziliano P, Wong HT. Anterior Chamber Angle Shape Analysis and Classification of Glaucoma in SS-OCT Images. *Journal of Ophthalmology* 2014;**2014**.

Niemeyer 2014 ***{published data only}***

* Niemeyer M, Marion K, Sadda SR, Chopra V. Evaluation and comparison of novel anterior chamber angle metrics using two spectral domain OCT devices. ARVO Annual Meeting Abstract Search and Program Planner. 2014; Vol. 55 (13):940.

Nongpiur 2010 ***{published data only}***

* Nongpiur ME, Sakata LM, Friedman DS, He M, Chan YH, Lavanya R, et al. Novel association of smaller anterior chamber width with angle closure in Singaporeans. *Ophthalmology* 2010;**117**(10):1967–73.

Nongpiur 2013 ***{published data only}***

* Nongpiur ME, Haaland BA, Friedman DS, Perera SA, He M, Foo LL, et al. Classification algorithms based on anterior segment optical coherence tomography measurements for detection of angle closure. *Ophthalmology* 2013;**120**(1): 48–54.

Nongpiur 2014 ***{published data only}***

* Nongpiur ME, Haaland BA, Perera SA, Friedman DS, He M, Sakata LM, et al. Development of a score and probability estimate for detecting angle closure based on anterior segment optical coherence tomography. *American Journal of Ophthalmology* 2014;**157**(1):32–38.e1.

Nongpiur 2017 ***{published data only}***

* Nongpiur ME, Aboobakar IF, Baskaran M, Narayanaswamy A, Sakata LM, Wu R, et al. Association of Baseline Anterior Segment Parameters With the Development of Incident Gonioscopic Angle Closure. *JAMA ophthalmology* 2017;**135**(3):252–8.

Nuriyah 2010 ***{published data only}***

* Nuriyah Y, Ren X T, Jiang L, Liu XP, Zou YH. Comparison between ophthalmologists and community health workers in screening of shallow anterior chamber with oblique flashlight test. *Chinese Medical Sciences Journal* 2010;**25**(1): 50–2.

Pakravan 2012 ***{published data only}***

* Pakravan M, Sharifipour F, Yazdani S, Koohestani N, Yaseri M. Scheimpflug imaging criteria for identifying eyes at high risk of acute angle closure. *Journal of Ophthalmic & Vision Research* 2012;**7**(2):111–7.

Pekmezci 2009 ***{published data only}***

* Pekmezci M, Porco TC, Lin SC. Anterior segment optical coherence tomography as a screening tool for the assessment of the anterior segment angle. *Ophthalmic surgery, lasers & imaging* 2009;**40**(4):389–98.

Quek 2012 ***{published data only}***

* Quek DT, Narayanaswamy AK, Tun TA, Htoon HM, Baskaran M, Perera SA, et al. Comparison of two spectral domain optical coherence tomography devices for angle-closure assessment. *Investigative Ophthalmology & Visual Science* 2012;**53**(9):5131–6.

Ren 2005 ***{published data only}***

* Ren B C, He Y, Chen L, Yang JG, Sun NX. Epidemiology of glaucoma in a rural population in Shaanxi Province. [Chinese]. *International Journal of Ophthalmology* 2005;**5** (5):1037–42.

Rigi 2016 ***{published data only}***

* Rigi M, Bell NP, Lee DA, Baker LA, Chuang AZ, Nguyen D, et al. Agreement between Gonioscopic Examination and Swept Source Fourier Domain Anterior Segment Optical Coherence Tomography Imaging. *Journal of Ophthalmology* 2016;**2016**.

Rojananuangnit 2016 ***{published data only}***

* Rojananuangnit K, Salyapongse P. Ocular biometric parameters variation between closed and opened angles in Thai population. ARVO Annual Meeting Abstract Search and Program Planner. 2016; Vol. 57 (12):3388.

Rueda 2003 ***{published data only}***

* Rueda JG, Gomez R, Parra J, Ribero Moll S M, Orozco L, Vera L. Glaucoma screening in Colombian population. ARVO Annual Meeting Abstract Search and Program Planner. 2003; Vol. 2003:3414.

Sah 2007 ***{published data only}***

* Sah RP, Badhu BP, Pokharel PK, Thakur SK, Das H, Panda A. Prevalence of glaucoma in Sunsari district of eastern Nepal. *Kathmandu University Medical Journal* 2007; **5**(3):343–8.

Sakata 2007 ***{published data only}***

* Sakata K, Sakata LM, Sakata VM, Santini C, Hopker LM, Bernardes R, et al. Prevalence of glaucoma in a South Brazilian population: Projeto Glaucoma. *Investigative Ophthalmology & Visual Science* 2007;**48**(11):4974–9.

Sasikumar 2011 ***{published data only}***

* Sasikumar R, Sathidevi AV, Dhanraj AR, Narendra KP, Balu R, Prabhu D, et al. Lens Vault in Asian Indian Eyes with Angle Closure. ARVO Annual Meeting Abstract Search and Program Planner. 2011; Vol. 2011:6272.

Scalamogna 2002 ***{published data only}***

* Scalamogna MO, Rueda J. Screening Program with FDT, Tonopen and Angular Evaluation on a Latin American Population. ARVO Annual Meeting Abstract Search and Program Planner. 2002; Vol. 2002:3326.

Shibata 1992 ***{published data only}***

* Shibata T, Takahashi N, Watanabe N. Measurements of anterior chamber depth and anterior chamber angle in narrow angle patients by image analysis. *Rinsho Ganka* 1992;**46**(3):328–9.

Shikino 2016 *{published data only}*

* Shikino K, Hirose Y, Ikusaka M. Oblique Flashlight Test: Lighting Up Acute Angle-Closure Glaucoma. *Journal of General Internal Medicine* 2016;**31**(12):1538.

Sparks 1997 *{published data only}*

* Sparks BI. Tangential penlight angle estimation. *Journal of the American Optometric Association* 1997;**68**(7):432–4.

Talaspayeva 2015 *{published data only}*

* Talaspayeva A. Biometric measures in Kazakh and European healthy subjects predisposing to angle closure glaucoma. ARVO Annual Meeting Abstract Search and Program Planner. 2015; Vol. 56 (7):3692.

Tay 2015 *{published data only}*

* Tay EL, Yong VK, Lim BA, Sia S, Wong EP, Yip LW. Agreement of angle closure assessments between gonioscopy, anterior segment optical coherence tomography and spectral domain optical coherence tomography. *International Journal of Ophthalmology* 2015;**8**(2):342–6.

Tomoyose 2010 *{published data only}*

* Tomoyose E, Higa A, Sakai H, Sawaguchi S, Iwase A, Tomidokoro A, et al. Intraocular pressure and related systemic and ocular biometric factors in a population-based study in Japan: the Kumejima study. *American Journal of Ophthalmology* 2010;**150**(2):279–86.

Trueba 2010 *{published data only}*

* Castillo AT, Bravo LJN, Valencia CC, Barragan MJGD, Garcia RAA. Is the flashlight test of any use in primary care for detecting eyes with shallow anterior chamber?. *Atencion Primaria* 2010;**42**(3):149–53.

Tun 2013 *{published data only}*

* Tun TA, Baskaran M, Zheng C, Sakata LM, Perera SA, Chan AS, et al. Assessment of trabecular meshwork width using swept source optical coherence tomography. *Graefes Archive for Clinical & Experimental Ophthalmology* 2013; **251**(6):1587–92.

Vargas 1973 *{published data only}*

* Vargas E, Drance SM. Anterior chamber depth in angle-closure glaucoma. Clinical methods of depth determination in people with and without the disease. *Archives of Ophthalmology* 1973;**90**(6):438–9.

Varma 2017 *{published data only}*

* Varma DK, Kletke SN, Rai AS, Ahmed IIK. Proportion of undetected narrow angles or angle closure in cataract surgery referrals. *Canadian Journal of Ophthalmology* 2017; **52**(4):366–72.

Wang 2013 *{published data only}*

* Wang YE, Li Y, Wang D, He M, Lin S. Comparison of factors associated with occludable angle between American Caucasians and ethnic Chinese. *Investigative Ophthalmology & Visual Science* 2013;**54**(12):7717–23.

Wang 2014 *{published data only}*

* Wang GQ, Bai ZX, Luo S, Shi J, Shi Q, Cao LQ, et al. Characteristic of intraocular pressure distribution in population of 1115 Tibetan aged 40 years old or more. *International Eye Science* 2014;**14**(7):1181–5.

Wang 2015 *{published data only}*

* Wang J. Anterior chamber width, anterior chamber volume and their association with ocular and general parameters: The Beijing eye study. ARVO Annual Meeting Abstract Search and Program Planner. 2015; Vol. 56 (7): 5004.

Wong 2015 *{published data only}*

* Wong DWK, Xu Y, Liu JJ, Mani B, Aung T. Automatic angle closure detection from 3D AS-OCT imaging (ACAI). ARVO Annual Meeting Abstract Search and Program Planner. 2015; Vol. 56 (7):4974.

Xie 2011 *{published data only}*

* Xie TY, Gao L, Ai K, Fu J, Guo B, Yusufu M, et al. Epidemical survey of glaucoma among Uigur peasants aged 40 years or above in Kuche rural. [Chinese]. *Chinese Journal of Experimental Ophthalmology* 2011;**29**(2):169–73.

Xu 2001 *{published data only}*

* Xu L, Yang H, Zhao X. A pilot study on rapid glaucoma screening. *Chinese Journal of Ophthalmology* 2001;**37**(1): 16–20.

Xu 2004 *{published data only}*

* Xu L, Chen JH, Li JJ, Luo L, Yang H, Zhang RX, et al. The prevalence and its screening methods of primary open angle glaucoma in defined population-based study of rural and urban in Beijing. *Chinese Journal of Ophthalmology* 2004;**40**(11):726–32.

Xu 2005 *{published data only}*

* Xu L, Zhang L, Xia CR, Li JJ, Hu LN, Ma K, et al. The prevalence and its effective factors of primary angle-closure glaucoma in defined populations of rural and urban in Beijing. *Chinese Journal of Ophthalmology* 2005;**41**(1):8–14.

Xu 2008 *{published data only}*

* Xu L, Cao WF, Wang YX, Chen CX, Jonas JB. Anterior chamber depth and chamber angle and their associations with ocular and general parameters: the Beijing Eye Study. *American Journal of Ophthalmogy* 2008;**145**(5):929–36.

Xu 2009 *{published data only}*

* Xu L, Li JJ, Xia CR, Wang YX, Jonas JB. Anterior chamber depth correlated with anthropomorphic measurements: the Beijing Eye Study. *Eye* 2009;**23**(3):632–4.

Xu 2011 *{published data only}*

* Xu L, You QS, Wang YX, Jonas JB. Associations between gender, ocular parameters and diseases: The Beijing Eye Study. *Ophthalmic Research* 2011;**45**(4):197–203.

Yamamoto 2005 *{published data only}*

* Yamamoto T, Iwase A, Araie M, Suzuki Y, Abe H, Shirato S, et al. The Tajimi Study report 2: prevalence of primary angle closure and secondary glaucoma in a Japanese population. *Ophthalmology* 2005;**112**(10):1661–9.

Yamamoto 2009 *{published data only}*

* Yamamoto T, Araie M, Iwase A, Kitazawa Y, Tajimi Study Group, Japan Glaucoma Society. A review of the Eye Health Care Project in Tajimi. *Acta Societatis Ophthalmologicae Japonicae* 2009;**113**(5):569–75.

Ye 1995 *{published data only}*

* Ye T, Mao W, Lu D. Comparison of simple methods to screen predisposing eye of primary angle-closure glaucoma. *Chinese Journal of Ophthalmology* 1995;**31**(5):341–4.

Ye 1998 *{published data only}*

* Ye T, Yu Q, Peng S, Wang N, Chen X. Six year follow-up of suspects of primary angle-closure glaucoma. *Chinese Journal of Ophthalmology* 1998;**34**(3):167–9.

Yip 2008 *{published data only}*

* Yip JL, Foster P, Gilbert CE, Uranchimeg D, Bassanhuu J, Lee PS, et al. Incidence of occludable angles in a high-risk Mongolian population. *British Journal of Ophthalmology* 2008;**92**(1):30–3.

Yu 1995a *{published data only}*

* Yu Q, Li S, Ye T. The study of grading standard photos of oblique flashlight test. *Eye Science* 1995;**11**(2):80–5.

Yu 1996 *{published data only}*

* Yu Q, Li S, Ye T. Evaluation for grading standard of oblique flashlight test. *Eye Science* 1996;**12**(2):98–102.

Yu 1997 *{published data only}*

* Yu Q, Li S, Ye T. Cost-effectiveness analysis of the screening strategies for primary angle closure glaucoma. *Eye Science* 1997;**13**(4):202-9, 185.

Yuan 2007 *{published data only}*

* Yuan HP, Yu H, Xiao Z, Shao ZB, Zhang XL, Yang BB, et al. The prevalence of primary angle-closure glaucoma and its causes in rural area of Shuangyang district in Changchun, Jilin province. *Chinese Journal of Ophthalmology* 2007;**43**(9):775–8.

Zhang 2008 *{published data only}*

* Zhang XL, Ren BC, He Y, Chen L, Sun NX, Yang JG. Observation study on the relationship between the asymmetry of intraocular tension and glaucoma without previous diagnosis and treatment in Shaanxi rural people aged above 50. [Chinese]. *International Journal of Ophthalmology* 2008;**8**(6):1194–7.

Zhang 2010 *{published data only}*

* Zhang HT, Xu L, Cao WF, Wang YX, Jonas JB. Anterior segment optical coherence tomography of acute primary angle closure. *Graefes Archive for Clinical & Experimental Ophthalmology* 2010;**248**(6):825–31.

Zhao 2008 *{published data only}*

* Zhao H, Chen XY, Li J, Zhao JF, Fu J, Yang KM. Analysis of the distribution characteristics and related factors of glaucoma in Urumchi. [Chinese]. *International Journal of Ophthalmology* 2008;**8**(10):2079–81.

Additional references

Alsbirk 1992

Alsbirk PH. Anatomical risk factors in primary angle-closure glaucoma. A ten year follow up survey based on limbal and axial anterior chamber depths in a high risk population. *International Ophthalmology* 1992;**16**(4-5):265–72.

Azuara-Blanco 2016

Azuara-Blanco A, Burr J, Ramsay C, Cooper D, Foster PJ, Friedman DS, et al. Effectiveness of early lens extraction for the treatment of primary angle-closure glaucoma (EAGLE): a randomised controlled trial. *Lancet* 2016;**388**(10052): 1389–97.

Bhargava 1973

Bhargava SK, Leighton DA, Phillips CI. Early angle-closure glaucoma. Distribution of iridotrabecular contact and response to pilocarpine. *Archives of Ophthalmology* 1973;**89**(5):369–72.

Clemmesen 1971

Clemmesen V, Alsbirk PH. Primary angle-closure glaucoma in Greenland. *Acta Ophthalmologica* 1971;**49**(1):47–58.

Congdon 1996

Congdon NG, Quigley HA, Hung PT, Wang TH, Ho TC. Screening techniques for angle-closure glaucoma in rural Taiwan. *Acta Ophthalmologica Scandinavica* 1996;**74**(2): 113–9.

Day 2012

Day AC, Baio G, Gazzard G, Bunce C, Azuara-Blanco A, Munoz B, et al. The prevalence of primary angle closure glaucoma in European derived populations: a systematic review. *British Journal of Ophthalmology* 2012;**96**(9): 1162–7.

Devereux 2000

Devereux JG, Foster PJ, Baasanhu J, Uranchimeg D, Lee PS, Erdenbeleig T, et al. Anterior chamber depth measurement as a screening tool for primary angle-closure glaucoma in an East Asian population. *Archives of Ophthalmology* 2000;**118**(2):257–63.

Drance 1973

Drance SM. Angle closure glaucoma among Canadian Eskimos. *Canadian Journal of Ophthalmology* 1973;**8**(2): 252–4.

Emanuel 2014

Emanuel ME, Parrish RK 2nd, Gedde SJ. Evidence-based management of primary angle closure glaucoma. *Current Opinion in Ophthalmology* 2014;**25**(2):89–92.

Foster 2000

Foster PJ, Devereux JG, Alsbirk PH, Lee PS, Uranchimeg D, Machin D, et al. Detection of gonioscopically occludable angles and primary angle closure glaucoma by estimation of limbal chamber depth in Asians: modified grading scheme. *British Journal of Ophthalmology* 2000;**84**(2):186–92.

Foster 2002

Foster PJ, Buhrmann R, Quigley HA, Johnson GJ. The definition and classification of glaucoma in prevalence surveys. *British Journal of Ophthalmology* 2002;**86**(2): 238–42.

Grewal 2011

Grewal DS, Brar GS, Jain R, Grewal SP. Comparison of Scheimpflug imaging and spectral domain anterior segment optical coherence tomography for detection of narrow anterior chamber angles. *Eye* 2011;**25**(5):603–11.

He 2007

He M, Huang W, Friedman DS, Wu C, Zheng Y, Foster PJ. Slit lamp-simulated oblique flashlight test in the detection of narrow angles in Chinese eyes: the Liwan eye study. *Investigative Ophthalmology and Visual Science* 2007;**48**(12): 5459–63.

Hong 2009

Hong S, Yi JH, Kang SY, Seong GJ, Kim CY. Detection of occludable angles with the Pentacam and the anterior segment optical coherence tomography. *Yonsei medical journal* 2009;**50**(4):525–8.

Kang 2013

Kang JJ, Allemann N, Cruz Jde L, Cortina MS. Serial analysis of anterior chamber depth and angle status using anterior segment optical coherence tomography after Boston keratoprosthesis. *Cornea* 2013;**32**(10):1369–74.

Kashiwagi 2004

Kashiwagi K, Kashiwagi F, Toda Y, Osada K, Tsumura T, Tsukahara S. A newly developed peripheral anterior chamber depth analysis system: principle, accuracy, and reproducibility. *British Journal of Ophthalmology* 2004;**88** (8):1030–5.

Kashiwagi 2006

Kashiwagi K, Kashiwagi F, Hiejima Y, Tsukahara S. Finding cases of angle-closure glaucoma in clinic setting using a newly developed instrument. *Eye* 2006;**20**(3):319–24.

Kurita 2009

Kurita N, Mayama C, Tomidokoro A, Aihara M, Araie M. Potential of the pentacam in screening for primary angle closure and primary angle closure suspect. *Journal of Glaucoma* 2009;**18**(7):506–12.

Lowe 1970

Lowe RF. Aetiology of the anatomical basis for primary angle-closure glaucoma. Biometrical comparisons between normal eyes and eyes with primary angle-closure glaucoma. *British Journal of Ophthalmology* 1970;**54**(3):161–9.

Nolan 2003

Nolan WP, Baasanhu J, Undraa A, Uranchimeg D, Ganzorig S, Johnson GJ. Screening for primary angle closure in Mongolia: a randomised controlled trial to determine whether screening and prophylactic treatment will reduce the incidence of primary angle closure glaucoma in an east Asian population. *British Journal of Ophthalmology* 2003;**87** (3):271–4.

Nolan 2006

Nolan WP, Aung T, Machin D, Khaw PT, Johnson GJ, Seah SK, et al. Detection of narrow angles and established angle closure in Chinese residents of Singapore: potential screening tests. *American Journal of Ophthalmology* 2006; **141**(5):896–901.

Parivadhini 2014

Parivadhini A, Lingam V. Management of secondary angle closure glaucoma. *Journal of Current Glaucoma Practice* 2014;**8**(1):25–32.

Quek 2011

Quek DT, Nongpiur ME, Perera SA, Aung T. Angle imaging: advances and challenges. *Indian Journal of Ophthalmology* 2011;**59 Suppl**:S69–75.

Quigley 1996

Quigley HA. Number of people with glaucoma worldwide. *British Journal of Ophthalmology* 1996;**80**(5):389–93.

Quigley 2006

Quigley HA, Broman AT. The number of people with glaucoma worldwide in 2010 and 2020. *British Journal of Ophthalmology* 2006;**90**(3):262–7.

Resnikoff 2004

Resnikoff S, Pascolini D, Etya'ale D, Kocur I, Pararajasegaram R, Pokharel GP, et al. Global data on visual impairment in the year 2002. *Bulletin of the World Health Organization* 2004;**82**(11):844–51.

Review Manager 2014 [Computer program]

Nordic Cochrane Centre, The Cochrane Collaboration. Review Manager 5 (RevMan 5). Version 5.3. Copenhagen: Nordic Cochrane Centre, The Cochrane Collaboration, 2014.

Rossi 2012

Rossi GC, Scudeller L, Delfino A, Raimondi M, Pezzotta S, Maccarone M, et al. Pentacam sensitivity and specificity in detecting occludable angles. *European Journal of Ophthalmology* 2012;**22**(5):701–8.

Scheie 1957

Scheie HG. Width and pigmentation of the angle of the anterior chamber; a system of grading by gonioscopy. *A.M.A. Archives of Ophthalmology* 1957;**58**(4):510–2.

Shaffer 1960

Shaffer RN. Primary glaucomas. Gonioscopy, ophthalmoscopy and perimetry. *Transactions - American Academy of Ophthalmology and Otolaryngology* 1960;**64**: 112–27.

Smith 2013

Smith SD, Singh K, Lin SC, Chen PP, Chen TC, Francis BA, et al. Evaluation of the anterior chamber angle in glaucoma: a report by the American Academy of Ophthalmology. *Ophthalmology* 2013;**120**(10):1985–97.

Takwoingi 2013

Takwoingi Y, Leeflang MM, Deeks JJ. Empirical evidence of the importance of comparative studies of diagnostic test accuracy. *Annals of Internal Medicine* 2013;**158**(7):544–54.

Tham 2014

Tham YC, Li X, Wong TY, Quigley HA, Aung T, Cheng CY. Global prevalence of glaucoma and projections of glaucoma burden through 2040: a systematic review and meta-analysis. *Ophthalmology* 2014;**121**(11):2081–90.

Thomas 2003

Thomas R, George R, Parikh R, Muliyil J, Jacob A. Five year risk of progression of primary angle closure suspects to primary angle closure: a population based study. *British Journal of Ophthalmology* 2003;**87**(4):450–4.

Van Herick 1969

Van Herick W, Shaffer RN, Schwartz A. Estimation of width of angle of anterior chamber. Incidence and significance of the narrow angle. *American Journal of Ophthalmology* 1969; **68**(4):626–9.

Vargas 1973

Vargas E, Drance SM. Anterior chamber depth in angle-closure glaucoma. Clinical methods of depth determination in people with and without the disease. *Archives of Ophthalmology* 1973;**90**(6):438–9.

Weinreb 2006

Weinreb RN, Friedman DS. *Angle Closure and Angle Closure Glaucoma*. 1st Edition. The Hague, The Netherlands: Kugler Publications, 2006.

Whiting 2011

Whiting PF, Rutjes AW, Westwood ME, Mallett S, Deeks JJ, Reitsma JB, et al. QUADAS-2: a revised tool for the quality assessment of diagnostic accuracy studies. *Annals of Internal Medicine* 2011;**155**(8):529–36.

Wilensky 1993

Wilensky JT, Kaufman PL, Frohlichstein D, Gieser DK, Kass MA, Ritch R, et al. Follow-up of angle-closure glaucoma suspects. *American Journal of Ophthalmology* 1993;**115**(3):338–46.

Yip 2008

Yip JL, Foster PJ, Gilbert CE, Uranchimeg D, Bassanhuu J, Lee PS, et al. Incidence of occludable angles in a high-risk Mongolian population. *British Journal of Ophthalmology* 2008;**92**(1):30–3.

* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Alonso 2010

Study characteristics			
Patient sampling	Case-control study. Methods of patient sampling and recruitment were not reported. Both eyes were used for analysis		
Patient characteristics and setting	Sample size: 112 eyes (38 eyes narrow angle and 74 open angle) Age: mean (SD), 51±12, range 21-72 years. Sex: 32 (53.3%) female Setting: secondary care Country: Brazil Ethnicity: not reported Exclusions: not reported		
Index tests	**Scheimpflug photography**: HR Pentacam, Oculus Inc, Germany, nasal and temporal angles were studied in the horizontal meridian, cut off values were derived from the study data for ACA, ACD and ACV		
Target condition and reference standard(s)	Static gonioscopy was performed, a narrow-angle was classified using a Shaffer grade of 1 (the number of quadrants/degrees occluded were not reported)		
Flow and timing	It was not reported if there were any uninterpretable results or any excluded patients. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflict of interest: no conflict of interest statement provided		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Unclear		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	Unclear		
		High	**Unclear**

Alonso 2010 (*Continued*)

DOMAIN 2: Index Test Scheimpflug photography			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Andrews 2012

Study characteristics	
Patient sampling	Case-control study. Cases were primary angle-closure suspects (PACS), controls were participants with open-angles who did not meet the PACS criteria. Data from the right eye was included in the analysis

Andrews 2012 (*Continued*)

Patient characteristics and setting	Sample size: 442 eyes (370 narrow angle and 72 open angle) Age: mean (SD), 59.8±4.9 years (narrow angle 59.7±5.2; controls 60.2±3.2) Sex: 345 (78.0%) female Setting: secondary care Country: China Ethnicity: Chinese Exclusions: prior intraocular surgery, excessively high risk of acute angle-closure attack
Index tests	**LACD:** graded as a percentage fraction of adjacent corneal thickness at the temporal limbus: >100%, 75%, 40%, 25%, 15%, 5%, and 0%, cut off value used ≤25% **SPAC**: measurements ranged from 1 to 12, with 1 representing the shallowest anterior chamber depth, cut off value used ≤6
Target condition and reference standard(s)	PACS: participants with pigmented trabecular meshwork not visible in at least two quadrants (≥180 degrees) on gonioscopy (without PAS, glaucomatous optic neuropathy or elevated IOP)
Flow and timing	There were no uninterpretable test results reported and no patients were excluded. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Conflicts of interest: Dr Kashiwagi has a Japanese patent on the SPAC (Japanese patent No. 3878164)

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	Yes		
		High	**High**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		

If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 2: Index Test SPAC			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Ashaye 2003

Study characteristics			
Patient sampling	Cohort study. Cases were newly diagnosed patients with primary glaucoma, with both cases and open angle controls were recruited from a secondary care setting from 1996 to 1998. Data from one eye was included in the analysis		
Patient characteristics and setting	Sample size: 490 eyes (40 narrow angle and 450 open angle) Age: mean (SD) 56.8±11.1 years, (glaucoma 57.8±11.5; non-glaucoma 55.8±10.7) Sex: 214 (47.5%) female Setting: secondary care Country: Nigeria Ethnicity: African Exclusions: not reported		
Index tests	**LACD**: If the peripheral anterior chamber depth was equal to or greater than the corneal thickness it was recorded as grade 4; half corneal thickness was grade 3; quarter thickness of cornea was noted as grade 2, less than a quarter as grade 1 and no distance between the iris and cornea as grade 0. A cut off value of ≤25% was used at the temporal limbus		
Target condition and reference standard(s)	A narrow angle was defined as an angle in which the pigmented trabecular meshwork was not seen in ≥270 degrees of the angle circumference by static gonioscopy		
Flow and timing	There were no uninterpretable or exclusions reported. The index test and reference standard conducted on the same occasion		
Comparative			
Notes	From the 450 participants with an open angle, 214 patients had POAG and 236 had no glaucoma Conflict of interest: no conflict of interest statement provided		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**
DOMAIN 2: Index Test LACD			

Ashaye 2003 (*Continued*)

Were the index test results interpreted without knowledge of the results of the reference standard?	No		
If a threshold was used, was it pre-specified?	Yes		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	No		
		High	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Baskaran 2007

Study characteristics	
Patient sampling	Case-control study, adult subjects were recruited from glaucoma and general ophthalmology clinics. Consecutive subjects were enrolled with either narrow or open angles. Data from one eye was selected randomly for analysis if both eyes were eligible
Patient characteristics and setting	Sample size: 120 eyes (53 narrow angle and 67 open angle) Age: mean (SD) 62.1±11.3, range 30-90 years Sex: 68 (56.7%) female

Baskaran 2007 (*Continued*)

	Setting: secondary care Country: Singapore Ethnicity: 87 (72.5%) Chinese, 25 (20.8%) Indian, 8 Malay (6.7%) Exclusions: Subjects with corneal disorders and uveitis were excluded in the control group. Patients with a history of laser or intraocular surgery were excluded in the narrow angle group
Index tests	**LACD**: determined at the temporal limbus and graded as % categories: 0%, 5%, 15%, 25% , 40%, 75% and ≥100%. Cut off values analysed were 0%, ≤5%, ≤15%, ≤25% and ≤40% **SPAC:** SPAC categorical grades used for risk of angle closure: S (suspect angle closure), P (potential angle closure). Thresholds used were S, P and a combination of S & P
Target condition and reference standard(s)	A narrow angle was defined as the presence of a Shaffer grade of up to 1 (10 degree iridotrabecular angle) for at least 180 degrees on gonioscopy with or without PAS
Flow and timing	There were no reported uninterpretable test results or excluded patients. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Conflict of interest: Dr Kashiwagi has a Japanese patent on SPAC (Japanese patent application no: 2003-111322)

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	Yes		
		High	**Low**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	Unclear		
If a threshold was used, was it pre-specified?	Yes		

Baskaran 2007 (*Continued*)

		Unclear	**Unclear**
DOMAIN 2: Index Test SPAC			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Unclear**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Unclear		
		Unclear	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Baskaran 2012

Study characteristics	
Patient sampling	Prospective cohort study. Subjects above the age of 40 years were recruited from a glaucoma clinic at a Singapore hospital. One eye from each patient was chosen randomly if both eyes were suitable

Baskaran 2012 (*Continued*)

Patient characteristics and setting	Sample size: 98 eyes (39 narrow angle and 59 open angle) Age: mean (SD) 60.7±12.6 years Sex: 49 (50%) female Setting: secondary care Country: Singapore Ethnicity: 69 (70%) Chinese Exclusions: prior intraocular surgery or penetrating eye injury, corneal disorders such as corneal endothelial dystrophy, pterygium or corneal scars that may preclude satisfactory imaging or those on medications that act on the pupil		
Index tests	**AS-OCT:** time domain, Visante; Carl Zeiss Meditec, Dublin, CA, USA. Three ASOCT images of each eye were obtained in dark conditions: one image scanning the angle at the nasal and temporal positions, one scanning the superior angle and one scanning the inferior angle. The cut off value was a closed angle in two or more quadrants which was defined as contact between the iris and angle wall anterior to the scleral spur		
Target condition and reference standard(s)	The ACA was considered 'closed' in that quadrant if the posterior pigmented trabecular meshwork (TM) could not be seen in the primary position without indentation on gonioscopy (Scheie grade 3 or 4). The eye was classified as having angle closure if there were two or more quadrants (180 degrees) closed		
Flow and timing	98 participants entered the study, 1 was excluded, reason not specified. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflict of interest: Aung has received research support, travel support and honoraria from Carl Zeiss Meditec, Dublin, CA USA, as well as an instrument loan Patients who underwent peripheral iridotomy were not excluded		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**High**
DOMAIN 2: Index Test AS-OCT			

Baskaran 2012 (*Continued*)

Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Baskaran 2013

Study characteristics	
Patient sampling	Prospective cohort study. Phakic subjects aged 40 years or older were recruited from glaucoma clinics at an eye hospital between January 2011 and July 2011. One eye from each patient was randomly selected for analysis if both eyes were eligible for the study
Patient characteristics and setting	Sample size: 140 eyes (32 narrow angle and 108 open angle) Age: mean (SD), 59.2±8.9 years, (narrow angle 63.7±8.0; controls 57.8±8.8) Sex: 99 (70.7%) female Setting: secondary care

Baskaran 2013 (*Continued*)

	Country: Singapore Ethnicity: 134 (95.7%) Chinese, 2 (1.4%) Malay, 3 (2.1%) Indian and 1 other Exclusions: Subjects with corneal disease that precluded imaging of the anterior segment and those with previous uveitis, intraocular surgery, or lid abnormalities were excluded
Index tests	**AS-OCT**: Swept Source domain, CASIA SS-1000, Tomey Corporation, Nagoya, Japan. Each eye was scanned with the 3-dimensional angle analysis scan. Cut off values were derived from the study data using ITC analysis for the "ITC index," which represents the ratio of positive ITC (angle closure) in degrees to the total angle visible, as a percentage
Target condition and reference standard(s)	The ACA was considered "closed" on gonioscopy in that quadrant if the posterior pigmented trabecular meshwork could not be seen in the primary position without indentation (Modified Shaffer grade 0 to 2). The eye was classified as having angle-closure if there were 2 or more closed quadrants (180 degrees)
Flow and timing	There were 152 participants originally studied, 1 subject had a poor quality scan, and in 11 subjects the scleral spur could not be identified, leaving 140 for the final analysis. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Subjects who had laser peripheral iridotomy were not excluded in the recruitment phase. Conflict of interest: the authors declare no conflicts of interest

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**High**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		

Baskaran 2013 (*Continued*)

If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Campbell 2015

Study characteristics	
Patient sampling	Prospective cohort study. Subjects aged ≥ 40 years with glaucoma or suspect glaucoma were recruited from two community optometry practices. One eye from each subject was selected at random if both eyes were eligible for the study
Patient characteristics and setting	Sample size: 80 eyes (12 narrow angle and 68 open angle) Age: mean (SD) 58.9±10.0, range 40-80 years Sex: 53 (66%) female Setting: not reported Country: United Kingdom Ethnicity: 70 (87.5%) Caucasian, 6 (7.5%) African, 4 (5%) Indian Exclusions: corneal disorders, recent eye infection, ocular inflammation (within the previous 6 months), previous refractive surgery, peripheral iridotomy or intra-ocular surgery

Index tests	**LACD**: original van Herick grading scheme used (grade 1-4) performed at the the nasal and temporal angle. Grade 1 was used as the cut off (<25%) at either nasal or the temporal angle **AS-OCT:** Spectral Domain, Topcon OCT-2000 (Topcon Europe Medical B.V). Laser wavelength of 840nm using anterior segment mode via a 3 mm line scan size with the scan count at 32. If any iris contact was visible anterior to the position of the scleral spur for either the nasal or temporal image or both, this was qualitatively classified as 'occludable'		
Target condition and reference standard(s)	If posterior trabecular meshwork was not visible for >90 degrees, or in other words, if one or more quadrants was graded 0-1 on the Shaffer grading scheme		
Flow and timing	84 subjects were recruited and 83 subjects attended for both visits. 4 subjects were unable to tolerate gonioscopy, 80 eyes were included in the final analysis for LACD. In 4 cases, the AS-OCT images were un-gradable and 76 eyes were analysed for AS-OCT.The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflicts of interest: the authors declare no conflicts of interest		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Unclear		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Unclear	**High**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	No		
If a threshold was used, was it pre-specified?	Yes		
		High	**Low**
DOMAIN 2: Index Test AS-OCT			

Campbell 2015 (*Continued*)

Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	No		
		High	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Chang 2011

Study characteristics	
Patient sampling	Prospective cross sectional study, asymptomatic subjects aged over 50 years were identified by systematic sampling from a polyclinic in Singapore, completing a comprehensive ophthalmic examination at the same visit between December 2005 and June 2006. Data from the right eye was included in the analysis

Chang 2011 (*Continued*)

Patient characteristics and setting	Sample size: 2047 eyes (395 narrow angle and 1652 open angle) Age: mean (SD), 63.2 ± 8 years, (narrow angle 65.1±7.8; controls 62.7±8.0) Sex: 1077 (52.6%), female Setting: secondary care Country: Singapore Ethnicity: Chinese Exclusions: patients with glaucoma, intraocular surgery or corneal disorders preventing anterior-chamber imaging
Index tests	**SPAC**: measurements ranged from 1 to 12, with 1 representing the shallowest anterior chamber depth. Cut off values used were a numerical value of 4 and ≤5 **AS-OCT:** Time domain, Visante, Carl Zeiss Meditec AG. Scans were centred on the pupil and taken along the horizontal (nasal-temporal) and vertical meridians (superior-inferior) to the peripheral angle. A quadrant was classified as closed when the iris was in contact with the angle wall. Cut off values; qualitative;when two or more quadrants were observed as closed, quantitative cut offs were derived from the study data using AOD750
Target condition and reference standard(s)	An eye was defined as narrow if it had a Shaffer score of 0 or 1 on non-indentation gonioscopy for at least two quadrants (180 degrees), with or without PAS
Flow and timing	There were 2102 participants originally studied, 55 could not complete all the tests and were excluded from the analysis due to: alignment errors (n=12), inability to follow instructions (n=16), refused gonioscopy (n=4), other reasons (n=18), 2047 eyes were included in the final analysis. There was quantitative AS-OCT data missing from 579 of the eyes analysed (28%) and SPAC data were not available on 41 eyes (2%). The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Conflict of interest: KK has a Japanese patent on the SPAC (Japanese patent no. 3878164). TA has received funding, travel support and honoraria from Carl Zeiss Meditec

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**

Chang 2011 (*Continued*)

DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 2: Index Test SPAC			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		

Chang 2011 (*Continued*)

	Low	

Congdon 1996

Study characteristics	
Patient sampling	Prospective cross sectional study. Residents of Jin Shan Township, Taiwan, aged 40 years and above were invited for screening. Both eyes were included in the analysis
Patient characteristics and setting	Sample size: 562 subjects Age: mean (SD) 59.2±11.8 years Sex: 312 (55.6%) female Setting: not reported Country: Taiwan Ethnicity: East Asian Exclusions: none reported
Index tests	**LACD:** modified van Herick grading method used; Grades 3 or 4 termed 'deep', Grade 2 'narrow'; Grade 1'critically narrow'. Cut off values were <25% and >25% to ≤50% **Flashlight**: oblique handlight illumination using three grades: critically narrow (nasal shadow > 1/2 the distance from limbus to pupillary axis); narrow (1/4 to 1/2); or deep (<1/4). Cut off values used were critically narrow (grade 1) and narrow (grade 2)
Target condition and reference standard(s)	The anterior chamber angle was graded by Zeiss 4-mirror dynamic gonioscopy. If no trabecular meshwork was seen in 1 or more quadrants (≥90 degrees), an overall grade of 'narrow' was given. A grade of 'critically narrow' was given to eyes that were 'closed' in two or more quadrants (≥180 degrees). The authors defined PACG as 'one or both eyes graded as narrow or critically narrow by gonioscopy who had one or more of the following: intraocular pressure (IOP) greater than 18 mmHg, a rise in IOP greater than or equal to 8 mmHg on dark-prone provocative testing, or past acute attack with an iridectomy already performed. The optic disc and visual field could be normal or abnormal.'
Flow and timing	562 participants were recruited, 503 participants were included in the analysis for LACD and 352 for the flashlight test. For the flashlight, the numbers were smaller than the LACD as handlight testing of all subjects was started one month after the study had begun.The index test and reference standard were conducted on the same occasion. It was not reported how many participants had uninterpretable results or were excluded
Comparative	
Notes	Conflict of interest: no conflict of interest statement provided The study definition of PACG does not conform to the International Society Geographical & Epidemiological Ophthalmology (ISGEO) standard since the optic disc and visual field could be normal or abnormal. Van Herick Grade 2 is a modified version of the original van Herick grade For both van Herick and flashlight grade 1 and grade 2 was compared to a critical narrow and narrow angle respectively on gonioscopy

Congdon 1996 (*Continued*)

Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**High**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	Unclear		
If a threshold was used, was it pre-specified?	Yes		
		Unclear	**Low**
DOMAIN 2: Index Test Flashlight			
Were the index test results interpreted without knowledge of the results of the reference standard?	Unclear		
If a threshold was used, was it pre-specified?	Yes		
		Unclear	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		

Congdon 1996 (*Continued*)

Were the reference standard results interpreted without knowledge of the results of the index tests?	Unclear		
		Unclear	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Unclear		
Did all patients receive a reference standard	Yes		
		Unclear	

Dabasia 2015

Study characteristics	
Patient sampling	Case-control study. Adult subjects were recruited from glaucoma and general ophthalmology clinics. Cases comprised subjects with suspected or confirmed PAC The open angle control group had no current or previous history of ocular disease, or were diagnosed with eye conditions not affecting angle configuration. Data from the right eye was included in the analysis (left eye was used if the right eye was not eligible for inclusion)
Patient characteristics and setting	Sample size: 78 eyes (42 narrow angle and 36 open angle) Age: median 66 IQR (53-79), range 30-83 years Sex: 44 (56.4%) female Setting: secondary care Country: United Kingdom Ethnicity: 44 (56%) White, 27 (35%) South Asian Exclusions: subjects receiving systemic or topical medications known to affect the ACA configuration (e.g., miotics), anomalies of the anterior segment that affect ACA configuration
Index tests	**LACD**: determined at the temporal limbus. Graded as a percentage fraction of adjacent corneal thickness at the temporal limbus: >100%, 75%, 40%, 25%, 15%, 5%, and 0%, cut off value used ≤25% **Scheimpflug photography**: Oculus Pentacam (software version 1.19r11). ACA estimates were obtained along the nasal-temporal meridian using Scheimpflug horizontal image segment 16 (184 to 4 degrees). Cut off values were derived from the study data for ACA, ACD and ACV **AS-OCT:** Time domain, Visante, Carl Zeiss Meditec AG (software version 2.0.1.88). An 'anterior segment single' mode using wide-field scanning optics was used to provide a cross-section of the

	nasal and temporal angles in a single, 16 x 6 mm image frame between the 3 and 9 o'clock positions. Optimal cut off were defined using the study data for ACA and ACD
Target condition and reference standard(s)	A narrow angle was defined as the posterior trabecular meshwork not visible for ≥270 degrees on non-indentation gonioscopy and with the eye in the primary position
Flow and timing	There were no uninterpretable test results reported and no patients were excluded. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Cut off values were obtained by contacting the author for 0%, ≤5% and ≤15% Conflict of interest: the authors declare no conflicts of interest

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	No		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	No		
		High	**High**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 2: Index Test Scheimpflug photography			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		

Dabasia 2015 (*Continued*)

If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Foster 2000

Study characteristics			
Patient sampling	Prospective cross-sectional study. Conducted in two phases, subjects aged 40 years and older were selected for examination in 1995 using a combination of multistage, clustered, simple random, and systematic sampling.The second phase was conducted in 1997 in which local government census data were used to select subjects aged 40 years and older evenly distributed between each decade age group. Both eyes were included in the analysis		
Patient characteristics and setting	Sample size:1717 subjects analysed, a gonioscopically narrow angle was found in at least one eye of 140 subjects. 35 eyes were classified as having PAC, and a further 28 as PACG Age: mean age not reported, range 40-93 years Sex: 974 (56.7%) female Setting: primary care Country: Mongolia Ethnicity: not reported Exclusions: if it was not possible to allocate a LACD grade for either eye the subject was excluded from the analysis		
Index tests	**LACD:** determined at the temporal limbus and graded as % categories: 0%, 5%, 15%, 25%, 40%, 75% and ≥100%. Cuts off reported for 0%, ≤5%, ≤15%, ≤25% and ≤40%		
Target condition and reference standard(s)	A narrow angle was defined as an angle in which the trabecular meshwork was not seen in ≥270 degrees of the angle circumference by gonioscopy. PAC was diagnosed in subjects with an occludable angle and either raised IOP and/or PAS. PACG was diagnosed in cases with an occludable angle combined with glaucomatous optic neuropathy		
Flow and timing	1800 subjects were originally recruited, with 1717 subjects analysed. Uninterpretable results were reported for 17 subjects for reference standard and 76 for index test. Index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflicts of interest: the authors declare no conflicts of interest		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		

Foster 2000 (*Continued*)

		Low	**Low**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	Unclear		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	No		
		High	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Gracitelli 2014

Study characteristics	
Patient sampling	Prospective cohort study. Patients with glaucoma or who were glaucoma suspects were enrolled when attending an outpatient clinic. One eye was randomly selected for analysis

Gracitelli 2014 (*Continued*)

Patient characteristics and setting	Sample size: 45 eyes (9 narrow angle and 36 open angle) Age: mean (SD), 47.1±16.4, range 19-85 years. Sex: 30 (67.7%) female Setting: secondary care Country: Brazil Ethnicity: not reported Exclusions: conditions precluding clear visualization of the AC (e.g., pterygium, corneal opacity), congenital anterior segment, abnormalities, eyelid alterations, ocular trauma and intraocular surgery (incisional or laser procedures)
Index tests	**Flashlight**: A flashlight beam was directed parallel to the iris from the temporal side. Eyes identified as having a narrow anterior chamber were those in which a nasal iris shadow, formed between the limbus and the pupillary edge, was visualized (grade 1). Eyes identified as having a deep anterior chamber were those in which a nasal light reflex, formed between the limbus and the pupillary edge was visualized. (grade 4). Cut off value grade 1 was used for the analysis
Target condition and reference standard(s)	Gonioscopy was performed in a dark room. Angles were graded as occludable where the posterior trabecular meshwork was not visible in 2 or more quadrants without indentation (180 degrees)
Flow and timing	Eyes which were excluded or had uninterpretable test results were not reported.The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Conflicts of interest: the authors declare no conflicts of interest

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Unclear		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Unclear	**Low**
DOMAIN 2: Index Test Flashlight			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		

Gracitelli 2014 (*Continued*)

If a threshold was used, was it pre-specified?	Yes		
		Low	**Unclear**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Grewal 2011

Study characteristics	
Patient sampling	Prospective cohort study. Patients aged ≥40 years were recruited from an ophthalmology clinic. Data from the right eye was analysed if both eyes were eligible
Patient characteristics and setting	Sample size: 265 eyes (28 narrow angle and 237 open angle) Age: mean (SD), 55.3 years, (narrow angle 56.2±6.5; controls 58.3±5.7) Sex: 136 (51.3%) female Setting: secondary care Country: India Ethnicity: Indian Exclusions: history of glaucoma, intraocular surgery, laser treatment, penetrating trauma, and corneal disorders that precluded SD-ASOCT or Scheimpflug imaging

Grewal 2011 (*Continued*)

Index tests	**AS-OCT:** spectral domain, RTVue 100 (Optovue Inc., Fremont, CA, USA, software version 4. 0). Anterior segment morphology was assessed with the corneal adaptor module long (CAM-L), using the angle scan protocol, which captured 1 1024 A-scans in 0.04s in the nasal and temporal quadrants. Optimal cut off values were derived from the study data at AOD500 and TISA 500 **Scheimpflug photography:** Pentacam (Oculus, software version 1.11). Optimal cut off values were derived from the study data using ACD and ACV		
Target condition and reference standard(s)	Static gonioscopy, Shaffer grading system was used and a narrow angle was defined as Shaffer grade 1 or less in all four quadrants (360 degrees)		
Flow and timing	300 participants were recruited; 35 subjects were excluded because of an undetectable scleral spur on AS-OCT.The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflict of interest: the authors declare no conflict of interest		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**
DOMAIN 2: Index Test Scheimpflug photography			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 2: Index Test AS-OCT			

Grewal 2011 (*Continued*)

Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

He 2007

Study characteristics	
Patient sampling	Case control study, subjects aged 50 and older were enrolled from Liwan District, Guangzhou, using cluster random sampling. Data from the right eye was included in the analysis
Patient characteristics and setting	Sample size: 295 eyes (186 narrow angle and 109 open angle) Age: mean (SD), 67.8±9.5 years, (narrow angle 70.0±8.7; controls 64.0±9.6) Sex: 186 (63.0%) female Setting: primary care

He 2007 (*Continued*)

	Country: China Ethnicity: Chinese Exclusions: subjects with abnormalities precluding clear visualization of the anterior chamber (e.g. , pterygium, corneal opacity, iris abnormalities) and subjects who underwent surgery that changes the configuration of the anterior segment (e.g., cataract, glaucoma, laser peripheral iridotomy)		
Index tests	**Flashlight**: flashlight beam was set parallel to the iris plane from the temporal side when the subjects looked straight ahead. Grading was in reference to the area occupied by the iris shadow on the nasal iris between the limbus and the pupil margin, as follows: shallow, iris shadow reaching the pupil margin;medium, iris shadow reaching middle of the nasal iris; deep, almost no shadow. The cut of value of 'shallow' was used (Grade 1)		
Target condition and reference standard(s)	All subjects identified as having "occludable" angles were defined as posterior and usually pigmented trabecular meshwork not visible in two or more quadrants (≥180 degrees) using static gonioscopy		
Flow and timing	602 subjects entered the study, excluded cases were eyes with aphakia/pseudophakia (n=44) and angle closure suspects (n=236) for the right eye, presence of pterygium and cornea abnormalities (n=22) and gonioscopy data missing (n=5). 295 eyes were included in the final analysis. There were no uninterpretable results reported. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflicts of interest: the authors declare no conflicts of interest		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	Yes		
		High	**High**
DOMAIN 2: Index Test Flashlight			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		

He 2007 (*Continued*)

If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Hong 2009

Study characteristics	
Patient sampling	Case-control study. One eye from each subject was randomly chosen for the analysis
Patient characteristics and setting	Sample size: 73 eyes (41 narrow angle and 32 open angle) Age: mean (SD), 65.2±10.0 years, (narrow angle 67.5 ± 8.0; controls 62.2 ± 11.5) Sex: 50 (68.5%), female Setting: secondary care Country: South Korea Ethnicity: Korean Exclusions: history of previous ocular trauma or intraocular disease/surgery
Index tests	**AS-OCT:** SL-OCT, Heidelberg Engineering,GmbH, Germany. Angle images were captured using the horizontal linear scan protocol (from 3-o'clock to 9-o'clock direction). ACA was measured

Hong 2009 (*Continued*)

	automatically by the angle at ARA500 **Scheimpflug photography:** Oculus Inc., Wetzlar, Germany.Angle images were captured using the horizontal linear scan protocol (from 3-o'clock to 9-o'clock direction) Optimal cut off values were derived from the study data for both index tests for ACA and ACD		
Target condition and reference standard(s)	A narrow angle was defined as an angle where the trabecular meshwork could not be seen $\geq$ 270 degrees of the angle circumference by static gonioscopy		
Flow and timing	Uninterpreatable results or excluded participants were not reported. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflict of interest: the authors report no conflict of interest		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Unclear		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	Yes		
		High	**High**
DOMAIN 2: Index Test Scheimpflug photography			
Were the index test results interpreted without knowledge of the results of the reference standard?	Unclear		
If a threshold was used, was it pre-specified?	No		
		High	**Unclear**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference stan-	Unclear		

Hong 2009 (*Continued*)

dard?			
If a threshold was used, was it pre-specified?	No		
		High	**Unclear**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Unclear		
		Unclear	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Unclear		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Unclear	

Khor 2010

Study characteristics	
Patient sampling	Prospective cross sectional study. Participants aged 50 years or older were recruited from a non-ophthalmic community clinic. Data from the right eye was analysed
Patient characteristics and setting	Sample size: 1853 eyes (380 narrow angle and 1473 open angle) Age: mean (SD), 63.4±8.11, range 50-93 years Sex: 1103 (52.4%), female Setting: secondary care Country: Singapore Ethnicity: 1883 (89.5%) Chinese, 44 (2.1%) Malay, 154 (7.3%) Indian and 23 (1.1%) other Exclusions: history of intraocular surgery or penetrating trauma, previous anterior segment laser treatment, or a history of glaucoma

Khor 2010 (*Continued*)

Index tests	**AS-OCT:** time-domain, Visante, Carl Zeiss Meditec, Dublin, CA. All four quadrants were examined, a closed angle was defined by contact between the iris and angle wall anterior to the scleral spur in any quadrant
Target condition and reference standard(s)	Static gonioscopy; posterior trabecular meshwork not be seen in the primary position without indentation (Scheie grade 3 or 4) in two or more quadrants (≥90 degrees)
Flow and timing	There were 2104 participants originally studied; 251(11.9%) eyes were uninterpretable as at least one of the quadrants could not be classified due to poor image quality on the AS-OCT images. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Conflict of interest: Carl Zeiss Meditec loaned the anterior segment optical coherence tomography for the study and provided technical support. Dr Aung has received financial support and honoraria for travel to conferences from Carl Zeiss Meditec Patient characteristics: Reported ethnicity and gender demographics was based on original 2104 subjects recruited Data reported compared a range of closed angles observed on gonioscopy and AS-OCT. Data extracted for the review; narrow angle defined on gonioscopy at ≥180 degrees and an closed angle observed on AS-OCT in one quadrant or more

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		

Khor 2010 (*Continued*)

		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Kim 2014

Study characteristics	
Patient sampling	Case control study. Study participants were identified by retrospective medical review and then examined between January 2010 and August 2013 at an University Hospital in glaucoma and cataract clinics. One eye was randomly selected for analysis if both eyes were eligible
Patient characteristics and setting	Sample size: 202 eyes, (101 narrow angle and 101 open angle) Age: mean (SD) for all participants, 64.5 ± 6.2 years. Sex: 110 (54.4%) female Setting: secondary care Country: Korea Ethnicity: Korean Exclusions: prior intraocular surgery
Index tests	**AS-OCT:** time domain, Visante, Carl Zeiss Meditec, Dublin, CA. Mode to capture; one cross-sectional horizontal scan. Cut off values were derived from the study data at examining lens vault and ACD

Target condition and reference standard(s)	Static gonioscopy; were the pigmented posterior trabecular meshwork was not visible for 180 degrees or more in the primary position, with peripheral anterior synechiae and/or raised intraocular pressure (IOP).
Flow and timing	There were 124 narrow angles and 112 age matched controls; 12 narrow angle participants and 11 controls had poor image quality (uninterpretable results), a further 11 narrow angles were excluded to match the number of controls. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Conflict of interest: the authors declare no conflict of interest

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	Yes		
		High	**High**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		

Kim 2014 (*Continued*)

Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Ko 2015

Study characteristics	
Patient sampling	Prospective cross-sectional study, subjects were recruited from participants of the first Shihpai Eye Study visit in 1999, a community-based,cross-sectional survey of vision and eye diseases aged 65 years and older in Shihpai, Taipei, Taiwan. Only one eye of each subject was included in the analysis
Patient characteristics and setting	Sample size: 374 eyes (199 narrow angle and 175 open angle) Age: mean (SD), 77.4±3.8 years, (narrow angle 77.6±4.1; controls 77.2±3.5) Sex: 122 (32.6%) female Setting: primary care Country: Taiwan Ethnicity: Chinese Exclusions: subjects with secondary angle-closure or visual field defects caused by other causes were excluded. Subjects were also excluded if the eye was pseudophakic
Index tests	**LACD**: modified van Herick, Grade 0 Iridocorneal contact, Grade 1 ≤1/4, Grade 2 >1/4 to ≤ 1/2, Grade 3 >1/2 to ≤3/4, Grade 4 >3/4 but ≤3/4 corneal thickness and Grade 5 > corneal thickness. Cut off values of >25% to ≤50% were used
Target condition and reference standard(s)	A narrow angle was defined as an angle in which the trabecular meshwork was not seen in ≥270 degrees of the angle circumference by gonioscopy. PAC was diagnosed in subjects with an occludable angle and either raised IOP and/or PAS. PACG was diagnosed in cases with an occludable angle combined with glaucomatous optic neuropathy

Ko 2015 (*Continued*)

Flow and timing	460 subjects were initially recruited, 86 excluded due to: gonioscopy not performed (n=15), exclusion criteria not met (n= 62) bilateral pseudophakia, (n= 3) pseudophakic PACG, (n= 6) Laser peripheral iridotomy. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflicts of interest: the authors declare no conflicts of interest		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**High**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	No		
If a threshold was used, was it pre-specified?	Yes		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	No		
		High	**Low**

Ko 2015 (*Continued*)

DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Kurita 2009

Study characteristics	
Patient sampling	Prospective cohort study, subjects were referred and consecutively recruited for a detailed examination of the ACA with gonioscopy to confirm a diagnosis in the outpatient clinic of the University Hospital of the University of Tokyo Graduate School of Medicine between April 1, 2006 and September 31, 2006. Both eyes were included in the analysis
Patient characteristics and setting	Sample size: 39 subjects (72 eyes), a gonioscopically narrow angle was found in 42 eyes in subjects with either PACS or PAC, 16 eyes of 9 patients with open angle glaucoma and 14 open angle eyes in normal eyes Age: mean (SD), 58.4±15.3, range 27-83 years Sex: not reported Setting: secondary care Country: Tokyo, Japan Ethnicity: Japanese Exclusions: pathological changes or history of diseases in the cornea, anterior chamber, iris, or ocular tissues which would affect anterior chamber angle, history of acute PAC in either eye, history of ocular surgery that would affect anterior chamber or evidence of broad PAS on gonioscopy
Index tests	**Scheimpflug photography:** Pentacam, Oculus Inc, Wetzlar, Germany, cut off value was derived from the study data for ACD
Target condition and reference standard(s)	Using gonioscopy, an eye having an ACA width of Shaffer's Grade 2 or less in 3 or more quadrants (≥270 degrees) was considered to be narrow
Flow and timing	47 subjects (83 eyes) entered the study, four eyes with broad PAS, 3 eyes with nodules in the ACA, 2 eyes with suspected ACA recession suggesting a history of ocular injury, and 2 eyes with significant ocular nystagmus were excluded, 39 subjects (72 eyes) were analysed. The index test and reference standard were conducted on the same occasion
Comparative	

Kurita 2009 (*Continued*)

Notes	Conflicts of interest: the authors declare no conflicts of interest		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**
DOMAIN 2: Index Test Scheimpflug photography			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		

Kurita 2009 (*Continued*)

Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Lavanya 2008

Study characteristics	
Patient sampling	Prospective cross-sectional study. Subjects aged 50 years were recruited from a community polyclinic, they were systematically sampled (every fifth patient registered at the polyclinic) and examined between December of 2005 to June of 2006. Both eyes were included in the analysis
Patient characteristics and setting	Sample size: 2052 subjects (422 subjects at least 1 eye had a narrow angle and 1630 subjects had an open angle in both eyes) Age: mean (SD), 63.3 ±8.0 years, (narrow angle 65.5±8.2; controls 62.8±7.9) Sex: 1085 (52.9%) female Setting: primary care Country: Singapore Ethnicity: 1840 (89.7%) Chinese, 43 Malay (2.1%), 146 Indian (7.1%), others (1.1%) Exclusions: history of glaucoma, previous intraocular surgery or penetrating eye injury, and corneal disorders, such as corneal endothelial dystrophy, corneal opacity, or pterygium, preventing ACD measurement
Index tests	**SPAC**: The range of peripheral ACD values was divided into 12 groups, each representing an equal increment in ACD and categorical grades. Cut off values used were a numerical grade of ≤5, P or S, combination of grade ≤5 and/or S or P **AS-OCT**: Time Domain, Visante, Carl Zeiss Meditec, Dublin, CA, Scans were centered on the pupil and taken along the horizontal (nasal-temporal angles at 0-180 degrees) and vertical meridians (superior-inferior angles 90-270 degrees). A closed angle on AS-OCT was defined by contact between the iris and any part of angle wall anterior to the scleral spur in ≥2 quadrants
Target condition and reference standard(s)	An eye was defined as having narrow angle by gonioscopy, if the posterior pigmented trabecular meshwork was not visible on non-indentation gonioscopy for ≥180 degrees, with or without PAS
Flow and timing	There were 2114 participants originally studied, Twelve subjects were ineligible because they were pseudophakic in both eyes or were known to have glaucoma , 50 subjects could not complete the tests for various reasons: alignment errors (12); inability to follow instructions (16) or focus on the fixation light (4); refused gonioscopy (4); or other reasons (14). Data from 2052 was included in the final analysis. The index test and reference standard were conducted on the same occasion
Comparative	

Lavanya 2008 (*Continued*)

Notes	Conflict of interest: Dr Kashiwagi has a Japanese patent on the SPAC (Japanese patent No. 3878164) . Dr Friedman has been a paid consultant to Carl Zeiss-Meditec.Dr Foster has received honoraria and travel support from Carl Zeiss Meditec. Dr Aung has received research funding and travel support from Carl Zeiss Meditec		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 2: Index Test SPAC			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			

Lavanya 2008 (*Continued*)

Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Melese 2016

Study characteristics	
Patient sampling	Case-control study. Subjects were recruited across 3 sites. When both eyes qualified, 1 eye was randomly selected for the study
Patient characteristics and setting	Sample size: 189 subjects recruited, however 69 eyes were used for analysis (31 narrow angle and 38 open angle) Age: mean (SD), 54.0±14.1 years, (narrow angle 60.9±9.2; controls 49.1±14.9) of the 189 subjects reported Sex: 132 (70%), female Setting: secondary care Country: USA Ethnicity: 94 (50%) Caucasian, 44 (23%) African origin, 27 (14%) Hispanic, and 24 (13%) Asian Exclusions: anterior segment abnormalities that could affect the angle parameters, such as significant corneal opacity, lid obstruction or eye movement artefact that could not properly be imaged, medication that may have affected angle anatomy within a month before imaging
Index tests	**AS-OCT:** Swept source CASIA SS-1000 (Tomey Corporation, Nagoya, Japan). For 3D image reconstruction, the CASIA SS-1000 obtains a series of 128 cross-sectional images (512 A-scans each) across the whole anterior chamber. Cut off values were derived from the study data

Target condition and reference standard(s)	Using the Spaeth grading system on gonioscopy, eyes were considered to have open angles if anything beyond the scleral spur was visible (grade D or E); all other eyes were graded as narrow (A or B) based on the deepest structure visible in one quadrant (90 degrees). For angles graded as C where the scleral spur was partially visualized, the classification as narrow or open was based on the clinical decision of whether treatment was required		
Flow and timing	There were 189 participants recruited, 120 eyes were used for training, therefore 69 were analysed for the study. Eyes which were excluded or had uninterpretable test results were not reported. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Demographics reported on whole set but not separately for the test set Open angle eyes included normals, POAG and suspect POAG Conflict of interest: reported financial disclosures considered not to raise any conflict of interest for the study		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Unclear		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	Yes		
		High	**High**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			

Melese 2016 (*Continued*)

Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Narayanaswamy 2010

Study characteristics	
Patient sampling	Prospective cross-sectional study. Subjects aged 50 years or older were recruited from a community polyclinic, they were systematically sampled (every fifth patient registered at the polyclinic) and examined from December of 2005 to June of 2006. Both eyes were included in the analysis
Patient characteristics and setting	Sample size: 1465 subjects (315 narrow angle and 1150 open angle) Age: mean (SD), 62.7±7.7, range 50-93 years. Sex: 793 (54.1%), female Setting: primary care Country: Singapore Ethnicity: 1318 (90.0%) Chinese, 27 (1.8%) Malay, 102 (7.0%), Indian and 8 (1.2%) others Exclusions: history of intraocular surgery, evidence of aphakia/pseudophakia, or penetrating trauma in the eye; previous anterior segment laser treatment; history of glaucoma; or corneal disorders such as corneal endothelial dystrophy, corneal opacity, or pterygium,
Index tests	**AS-OCT:** time domain, Visante; Carl Zeiss Meditec Inc. Single-scan-mode protocol: one image scanning the angle at the 3- and 9-o'clock positions followed by one scanning the superior angle at 12 o'clock and one scanning the inferior angle at 6 o'clock. Cut off values were derived from the study data for several parameters

Target condition and reference standard(s)	An eye was defined as having a narrow angle if the posterior pigmented trabecular meshwork was not visible for at least 180 degrees on non-indentation gonioscopy with the eye in the primary position
Flow and timing	There were 2047 participants originally studied, 582 were excluded due to; inability to locate the scleral spur (515), poor image quality (28), or software delineation errors (39). Data from 1465 participants was included in the final analysis. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Conflict of interest: Dr Friedman reports having been as a paid consultant to Carl Zeiss Meditec Inc, Dr Foster reports receiving honoraria and travel support from Carl Zeiss Meditec Inc, and Dr Aung reports receiving research funding, honoraria, and travel support from Carl Zeiss Meditec Inc

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		

Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Nolan 2006

Study characteristics	
Patient sampling	Prospective cross-sectional study, recruited from the electoral register of Tanjong Pagar district residing in 50 area clusters defined by street name, using a disproportionate, stratified, clustered, random sampling procedure. Subjects were drawn from each of four age strata (40 to 49, 50 to 59, 60 to 69, and 70 to 79 years). Only data from the right eye was analysed
Patient characteristics and setting	Sample size: 1090 eyes (71 narrow angle and 1019 open angle) Age: range 40-81 years Sex: 593 (54.4%) female Setting: secondary care Country: Singapore Ethnicity: Chinese Exclusions: none reported
Index tests	**LACD**: Determined at the temporal limbus and graded as percentage categories: 0%, 5%, 15%, 25%, 40%, 75% and ≥100%. Cut off values used were 0%, ≤5%, ≤15% and ≤25%
Target condition and reference standard(s)	Angles were classified narrow on gonioscopy if the posterior (usually pigmented) trabecular meshwork could be seen for less than 90 degrees (not visible ≥270 degrees) of the angle circumference
Flow and timing	There were no uninterpretable test results reported and no patients were excluded. The index test and reference standard were conducted on the same occasion
Comparative	

Nolan 2006 (*Continued*)

Notes	Conflicts of interest: the authors declare no conflicts of interest		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Unclear**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	No		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	No		
		High	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		

Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Nolan 2007

Study characteristics			
Patient sampling	Prospective cohort study. Subjects 40 years old or older were recruited from glaucoma clinics at an eye hospital. Both eyes were used in the analysis		
Patient characteristics and setting	Sample size: 200 subjects (99 narrow angle and 101 open angle) Age: median age 62.5, range 40-86 years Sex: 123 (60.6%) female Setting: secondary care Country: Singapore Ethnicity: 174 (85.7%) Chinese, 9 (4.4%) Malay, 12 (5.9%) Indian and 8 (3.9%) were of other ethnic origins. Exclusions: eyes of patients with pseudophakia or had previous glaucoma surgery		
Index tests	**AS-OCT:** prototype anterior segment OCT (Carl Zeiss Meditec, Dublin, CA). Images of the temporal, inferior, and nasal quadrants were analysed qualitatively. The cut off values used to as define angle closure on AS-OCT was contact between the peripheral iris and any part of the angle wall anterior to the scleral spur in one or more quadrants		
Target condition and reference standard(s)	An angle quadrant (90 degrees) was classified as closed on gonioscopy if the iris was in contact with the posterior (usually pigmented) trabecular meshwork (Spaeth grade, 0 degrees)		
Flow and timing	203 participants were recruited. In 3 subjects, it was not possible to obtain either gonioscopic grading or AS-OCT images. Data from 200 subjects were included in the final analysis.The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflict of interest: technical support and loan of AS-OCT from Carl Zeiss Meditec, Dublin, California Demographics: ethnicity and age were reported from the original 203 subjects entering the study, open angle cohort included normals and those with POAG. Study participants included patients who had undergone peripheral iridotomy		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**

Nolan 2007 (*Continued*)

DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Unclear		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Unclear	**High**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		

Nolan 2007 (*Continued*)

		Low	

Nongpiur 2011

Study characteristics			
Patient sampling	Case-control study. Angle closure subjects were recruited were those attending a glaucoma clinic and control subjects were recruited from an ongoing population-based study. Only data from the right eye was analysed.		
Patient characteristics and setting	Sample size: 278 eyes (102 narrow angle and 176 open angle) Age: mean (SD), 58.3±9.9 years, (65.3±9.1; controls 54.2±7.9) Sex: 150 (54.0%) female Setting: secondary care Country: Singapore Ethnicity: Chinese Exclusions: secondary angle closure, corneal abnormalities that would affect imaging, laser iridoplasty or an history of intraocular surgery history. Controls; family history of glaucoma		
Index tests	**AS-OCT**: time Domain, Visante, Carl Zeiss Meditec, Dublin, CA, Scans were centered on the pupil and were obtained along the horizontal axis (0°-180°) using the standard anterior segment single-scan protocol. The optimal threshold was derived from the study data examining lens vault		
Target condition and reference standard(s)	Presence of appositional angle closure for 180 degrees or more with peripheral anterior synechiae on gonioscopy, raised intraocular pressure, or both, but with or without glaucomatous optic neuropathy. Those with previous acute primary angle closure were defined as the presence of at least 2 of the following symptoms: ocular or periocular pain, nausea or vomiting or both, and an antecedent history of intermittent blurring of vision with haloes; a presenting intraocular pressure of more than 28 mmHg on Goldmann applanation tonometry; and the presence of at least 3 of the following signs: conjunctival injection, corneal epithelial edema, mid-dilated un-reactive pupil, and shallow anterior chamber		
Flow and timing	Eyes which were excluded or had uninterpretable test results were not reported.The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	All cases diagnosed with angle closure previously had LPI Conflict of interest: Tin Aung and Tien Yin Wong received financial Support from Carl Zeiss Meditec		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			

Nongpiur 2011 (*Continued*)

Was a consecutive or random sample of patients enrolled?	Unclear		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	Yes		
		High	**High**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Okabe 1991

Study characteristics			
Patient sampling	Prospective cross sectional study, recruited from a glaucoma screening programme in the Gifu prefecture, Japan. Participants were selected randomly between 1988-1989. Both eyes were included in the analysis		
Patient characteristics and setting	Sample size: 585 subjects (1169 eyes) Age: mean, male 59.1; female 58.4 years. SD was not reported Sex: 380 (65.0%), female Setting: primary care Country: Japan Ethnicity: Japanese Exclusions: history of glaucoma or trauma and ophthalmic diseases that could influence the angle		
Index tests	**LACD:** original van Herick grading used with a cut off value of <25%		
Target condition and reference standard(s)	A narrow angle was defined on gonioscopy as the mean grade from all four quadrants ≤2 using the Shaffer grading system		
Flow and timing	There were no uninterpretable or excluded results reported. Not reported when the reference test was conducted with respect to the the index test		
Comparative			
Notes	Conflict of interest: no conflict of interest statement provided		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		

Okabe 1991 (*Continued*)

If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Unclear		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Unclear	

Park 2011

Study characteristics	
Patient sampling	Prospective cross sectional study, consecutively recruited from the glaucoma service at the Asian Medical Center from May 2008 to January 2009. Data from one eye (randomly selected) was included in the analysis
Patient characteristics and setting	Sample size: 148 eyes (93 narrow angle and 55 open angle) Age: mean (SD), 65.1±12.0 years, (narrow angle 66.0±10.1; controls 63.5±14.6) Sex: 72 (48.6%) female Setting: secondary care Country: Republic of Korea Ethnicity: not reported Exclusions: ages of <40 or >80 years, refractive errors >3.00DS, pseudophakia/aphakia, corneal disorders, a history of glaucoma, previous intraocular surgery or penetrating eye injury. Plateau iris

	configuration and eyes with PAS were also excluded		
Index tests	**LACD:** determined at the nasal and temporal limbus. Original van Herick grading (Grade 4 ≥ 100%, Grade 3 50%, Grade 2 .25%. Grade 1 <25%). Grade 0 was defined as no space visible between the corneal slit image and the slit image on the iris. A cut off value of <25% was used at the temporal limbus **AS-OCT:** Time domain, Visante, Carl Zeiss Meditec, Dublin, CA. Enhanced anterior segment single" protocol (scan length 16 mm; 256 A-scans, with only only nasal and temporal angle images obtained. Angle closure was defined as contact between the peripheral iris and the angle wall anterior to the scleral spur. The cut off value used was at the temporal angle image		
Target condition and reference standard(s)	Gonioscopy, a narrow angle was determined when the posterior pigmented trabecular meshwork was not visible on non-indentation gonioscopy for at ≥60 degrees (two-thirds of quadrant) both with and without PAS at either the nasal or temporal quadrant		
Flow and timing	There were no uninterpretable test results reported and no patients were excluded. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflict of interest: no conflict of interest statement provided		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	No		
		High	**Low**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		

Park 2011 (*Continued*)

		Low	**Low**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Radhakrishnan 2005

Study characteristics	
Patient sampling	Case control study. Subjects were recruited from an secondary care setting. Both eyes were used in the analysis

Radhakrishnan 2005 (*Continued*)

Patient characteristics and setting	Sample size: 31 eyes (24 subjects) (8 eyes narrow angle and 23 open angle) Age: mean (SD), 42.9 years, SD not reported Sex: 15 (62.5%), female Setting: secondary care Country: USA Ethnicity: Majority of subjects were Caucasian Exclusions: not reported.
Index tests	**AS-OCT:** prototype anterior segment OCT (Carl Zeiss Meditec, Dublin, CA). Temporal and nasal AC angles were recorded in lateral gaze. Optimal thresholds were derived from study data on AOD 500, ARA 500, ARA 750, TISA 500 AND TISA 750
Target condition and reference standard(s)	A narrow angle was defined as Shaffer grade 1 or lower in all quadrants (360 degrees) on gonioscopy
Flow and timing	Uninterpretable or excluded results were not reported. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	The number of the reported ethnicity of subjects do not match the number analysed Conflict of interest: Dr Huang has provided research support to Carl Zeiss Meditec Inc, Dublin, Calif, and has received a patent royalty for optical coherence tomography

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Unclear		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	Unclear		
		High	**High**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		

Radhakrishnan 2005 (*Continued*)

If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Rossi 2012

Study characteristics	
Patient sampling	Case-control study. Cases ≥40 years and controls ≥18 years were both recruited from an ophthalmology clinic. Both eyes were used in the analysis
Patient characteristics and setting	Sample size: 64 eyes (28 narrow angle and 36 open angle) Age: mean (SD), 66.7±10.5 years, (66.1±13.2; controls 66.2±7.9) Sex: 23 (67.7%), female Setting: secondary care Country: Italy Ethnicity: Caucasian Exclusions: no previous laser treatment, no previous filtering surgery or other ocular surgery

Index tests	**Scheimpflug photography:** Oculus Pentacam HR, optimal cut off's were derived from the study data for the following parameters; ACA, ACD (central-superior-inferior-nasal-temporal); ACV and central ACD		
Target condition and reference standard(s)	Narrow angle was defined by the presence of Shaffer grade 0-1 in at least 2 quadrants (≥180 degrees) on gonioscopy and no evidence of glaucomatous optic neuropathy or visual field defect		
Flow and timing	Uninterpretable or excluded participants were not reported.The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflict of interest: the authors declared no conflict of interest		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	No		
Did the study avoid inappropriate exclusions?	Yes		
		High	**High**
DOMAIN 2: Index Test Scheimpflug photography			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		

Rossi 2012 (*Continued*)

Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Sakata 2010

Study characteristics	
Patient sampling	Prospective cohort study. Patients were recruited from a Glaucoma Clinic at a Singapore hospital from January to June 2007. One eye per patient was randomly selected for analysis
Patient characteristics and setting	Sample size: 101 eyes Age: mean (SD), 62.4±9.6, range 41-89 years Sex: 57 (58%) female Setting: secondary care Country: Singapore Ethnicity: 88 (87%) Chinese, 2 Malay (2%), 7 Indian (7%), 4 others (4%) Exclusions: history of previous intraocular surgery or penetrating trauma, or any cornea opacities or abnormalities that precluded AS-OCT imaging
Index tests	**AS-OCT:** time domain,Visante; (model 1000,software version 1.0, Carl Zeiss Meditec) **AS-OCT:** time domain, SL-OCT device (software version 1.1, Heildelberg Engineering) Scans for both devices examined the ACA of each eye were obtained at the 3 and 9 o' clock positions (horizontal), and at the 6 and 12 o'clock positions (vertical). The ACA was considered 'closed' on both devices if there was any contact between the iris and angle wall anterior to the scleral spur in at least one quadrant
Target condition and reference standard(s)	An ACA quadrant was considered 'closed' using gonioscopy if the posterior trabecular meshwork could not be seen in the primary position without indentation (Scheie grade 3 or 4) in 90 degrees or more

Sakata 2010 (*Continued*)

Flow and timing	There were 101 participants originally studied, there were 18 participants excluded where ACA could not be assessed in four quadrants with both AS-OCT devices. Data from 83 eyes where used in the final analysis. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	All cases diagnosed with angle closure previously had LPI Demographics reported are of those recruited and not number analysed Conflict of interest: Carl Zeiss Meditec and Heidelberg Engineering loaned the respective anterior segment OCTs. Dr Aung has received research support and honoraria for travel to conferences from Carl Zeiss Meditec. Dr HT Wong has received financial support and honoraria for travel to conferences from Carl Zeiss Meditec and Heidelberg Engineering		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**High**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		

Sakata 2010 (*Continued*)

Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Tan 2012

Study characteristics	
Patient sampling	Prospective cross-sectional study. Subjects aged 50 years were recruited from a community polyclinic, they were systematically sampled (every fifth patient registered at the polyclinic) and examined between December of 2005 to July of 2006. Only data from the right eye was analsyed
Patient characteristics and setting	Sample size: 1465 eyes (315 narrow angle and 1150 open angle) Age: mean (SD), 62.7 ±7.7 years Sex: 793 (54.1%) female Setting: primary care Country: Singapore Ethnicity: 1317 (90%) Chinese, 27 Malay (1.8%), 102 Indian (7.0%), others (1.2%) Exclusions: history of glaucoma, previous intraocular surgery or laser treatment, penetrating eye injury or corneal disorders preventing anterior chamber assessment
Index tests	**AS-OCT:** time domain,Visante; Visante, Carl Zeiss Meditec, Dublin, California, USA). Scans were centered on the pupil and taken along the horizontal axis,using the standard anterior segment single-scan protocol. Optimal thresholds were derived from study's data on ACV. LV, ACA
Target condition and reference standard(s)	An narrow angle was defined if the posterior trabecular meshwork was not visible for at least 180 degrees on non-indentation gonioscopy with the eye in the primary position
Flow and timing	There were 2047 participants originally studied, 582 subjects were excluded for the following reasons: 11 subjects could not undergo gonioscopy; 62 subjects did not complete AS-OCT examination or had poor quality AS-OCT images;42 subjects showed software delineation errors;and the scleral

	spur was not clearly visible on AS-OCT images in 467 subjects. Data from 1465 eyes where used in the final analysis The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Dr Aung has received research support and honoraria for travel to conferences from Carl Zeiss Meditec		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**

Tan 2012 (*Continued*)

DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Thomas 1996

Study characteristics	
Patient sampling	Prospective cohort study, patients were consecutively recruited when they attended an outpatient clinic. Data from one eye (randomly selected) was included in the analysis
Patient characteristics and setting	Sample size: 96 eyes (21 narrow angle and 75 open angle) Age: mean (SD), 45.5±4.9, range 14-74 years Sex: 46 (47.9%) female Setting: secondary care Country: India Ethnicity: Indian Exclusions: acute conditions
Index tests	**LACD**: original van Herick grading used Grade 4 ≥ 100%, Grade 3 50%, Grade 2 .25%. Grade 1 <25%. Cut off used LACD <25% **Flashlight**: The flashlight beam was directed parallel to the iris from the temporal side. The crescent iris shadow thus formed was graded according to the area between the limbus and the pupillary edge that it occupied. Grade 1 was defined as more than half, Grade 2 as half to one-third; Grade 3 minimal; and Grade 4 as no shadow. Grade 1 and 2 were used as the cut offs
Target condition and reference standard(s)	Dynamic gonioscopy was performed with the clinician deciding whether the angle was 'gonioscopically occludable. A Scheie grade 3 or less was considered to be narrow (middle third of the trabecular meshwork visible)
Flow and timing	100 patients recruited, 4 patients were excluded as they had acute conditions: phacolytic glaucoma (n=1), phacomorphic glaucoma (n=2) and a corneal ulcer (n=1). There were no uninterpretable test results. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Conflict of interest: no conflict of interest statement provided

Thomas 1996 (*Continued*)

Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Unclear**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	No		
If a threshold was used, was it pre-specified?	Yes		
		High	**Low**
DOMAIN 2: Index Test Flashlight			
Were the index test results interpreted without knowledge of the results of the reference standard?	No		
If a threshold was used, was it pre-specified?	Yes		
		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		

Thomas 1996 (*Continued*)

Were the reference standard results interpreted without knowledge of the results of the index tests?	No		
		High	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Tun 2017

Study characteristics	
Patient sampling	Prospective cohort study. 202 phakic subjects were recruited from a glaucoma clinic of the Singapore National Eye Center. Data from one eye was in the analysed
Patient characteristics and setting	Sample size: 202 eyes (50 narrow angle and 152 open angle) Age: mean (SD), 62.3 ±9.7 years Sex: 113 (55.9%) female Setting: secondary care Country: Singapore Ethnicity: 170 (84.2%) Chinese Exclusions: history of intraocular surgery or any corneal abnormalities that would preclude OCT imaging
Index tests	**AS-OCT:** spectral domain, HD-OCT Cirrus-OCT, model 5000; Carl Zeiss Meditec Dublin, California, USA). Any contact of the iris to cornea anterior to the scleral spur (SS) defined as a closed angle in that quadrant. If the SS was not visible but the TM was, any contact between the trabecular meshwork and the iris was also diagnosed as a closed angle in that quadrant where two or more quadrants were defined as closure
Target condition and reference standard(s)	A eye was considered closed if the posterior trabecular meshwork could not be seen in the primary position without indentation (the Scheie grade 3 or 4) in 2 quadrants (180 degrees) on gonioscopy.

Tun 2017 (*Continued*)

Flow and timing	There were 202 subjects recruited, and there 10 images excluded from AS-OCT as the examiner was unable to determinate the trabecular meshowork and SS locations. It is not reported whether this participants were from the open or narrow angle group. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	From the 152 participants with an open angle, 70 patients had POAG and 64 had no glaucoma. Of the original angle closure eyes, 18 had open angles after LPI and were included also in the open angle group Dr Aung has received research support and honoraria for travel to conferences from Carl Zeiss Meditec		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		

Tun 2017 (*Continued*)

Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Wirbelauer 2005

Study characteristics	
Patient sampling	Prospective cohort study, both eyes were included in the analysis
Patient characteristics and setting	Sample size: 109 subjects (138 eyes) Age: mean (SD), 66±15 years, range 23-90 years Sex: 66 (60.1%) female Setting: not reported Country: Germany Ethnicity: not reported Exclusions: not reported
Index tests	**LACD**: determined at the temporal limbus using the original van Herick grading Grade 4 ≥ 100%, Grade 3 50%, Grade 2 .25%, Grade 1 <25%). Cut off used a temporal LACD ≤25% **AS OCT:** slit lamp-adapted OCT system (4Optics AG, Lübeck, Germany), measurements were performed perpendicularly to the ocular surface with the slitlamp aligned at a 45 degree angle. The nasal and temporal angles were studied. Optimal thresholds were extrapolated from the study data for ACA and AOD500
Target condition and reference standard(s)	Gonioscopy; ACA of ≤20 degrees, the angle was considered narrow in the nasal and/or temporal angle
Flow and timing	Uninterpretable test results and exclusions were not reported. The index test and reference standard were conducted on the same occasion

Wirbelauer 2005 (*Continued*)

Comparative			
Notes	Conflict of interest: no conflict of interest statement provided AS-OCT analysis; study combined both AS-OCT nasal and temporal quadrant data for both eyes LACD analysis; study compared the temporal LACD to the reference temporal ACA for both eyes		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Unclear		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Unclear		
		Unclear	**Unclear**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	Unclear		
If a threshold was used, was it pre-specified?	Yes		
		Unclear	**Unclear**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Unclear		
If a threshold was used, was it pre-specified?	No		
		High	**Unclear**
DOMAIN 3: Reference Standard			

Wirbelauer 2005 (*Continued*)

Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Unclear		
		Unclear	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Wong 2009

Study characteristics	
Patient sampling	Prospective cohort study, participants recruited from a glaucoma clinic at a Singapore hospital from January 1 to July 31, 2007. One eye of each subject was included in the analysis
Patient characteristics and setting	Sample size: 188 eyes Age: mean (SD), 63.3±10.5, range 37-99 years. Sex: 107 (57%), female Setting: secondary care Country: Singapore Ethnicity: 162 (86.2%) Chinese, 8 (4.3%) Malay, 12 (6.4%) Indian and other 6 (3.2%) Exclusions: patients who had undergone any prior intraocular procedures or had any penetrating eye injuries or corneal disorders, such as corneal endothelial dystrophy, pterygium, or a corneal scar, that may preclude satisfactory imaging
Index tests	**SPAC**: numerical scale ranged from 1 to 12, with 12 representing the deepest ACD. The categorical grading indicates the risk for angle closure: S, suspect angle closure; P, potential angle closure; and no suffix (for open angle results). Cut off values used: optimal thresholds were derived from study data using either separate or combined categorical and numerical grading **AS-OCT**: SL-OCT (Heidelberg Engineering, Heidelberg, Germany), image acquisition with the SL-OCT required imaging of the entire cross-section of the anterior segment in 1 single-image

Wong 2009 (*Continued*)

	frame. The ACA was considered closed on SL-OCT imaging if there was contact between the iris and angle wall anterior to the scleral spur in two quadrants or more
Target condition and reference standard(s)	Gonioscopy, the ACA was considered closed if the posterior trabecular meshwork could not be seen in the primary position without indentation (Scheie grade 3 or 4) in 2 or more quadrants (≥180 degrees)
Flow and timing	188 participants recruited, 35 were excluded due; failure in obtaining SL-OCT images due to obstructions or motion artefacts (n=14), SL-OCT images could not be graded owing to poor definition of the scleral spur (n=21), leaving 153 participants for final analysis. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Ethnicity reported on original participants entering the study and not the analysed subjects Defined ACA closure for AS-OCT and gonioscopy was reported in one or more quadrants, data entry for this review was considered for only 2 quadrants identified as closed for both the reference and index test Conflict of interest: no conflict of interest reported

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**High**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**

Wong 2009 (*Continued*)

DOMAIN 2: Index Test SPAC			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Wong 2009a

Study characteristics	
Patient sampling	Prospective cohort study. Recruited from a glaucoma clinic at a Singapore hospital. One eye per patient was selected for analysis; this was the right eye if both eyes fulfilled the inclusion criteria
Patient characteristics and setting	Sample size: 45 eyes (17 narrow angle and 28 open angle) Age: mean (SD), 62.5±9.1 years Sex: 28 (62.2%) female

	Setting: secondary care Country: Singapore Ethnicity: 41 (91.1%) Chinese Exclusions: history of previous intraocular surgery or penetrating trauma or any cornea opacities or abnormalities that precluded angle imaging
Index tests	**AS-OCT:** time domain,Visante; Carl Zeiss Meditec **AS-OCT:** spectral domain, HD-OCT Cirrus-OCT; Carl Zeiss Meditec Dublin, California Cut off values used for both devices was if there was any contact between the iris and angle wall anterior to the scleral spur was noted in one quadrant
Target condition and reference standard(s)	Gonioscopy, an angle quadrant (90 degrees) was considered "closed" if the posterior trabecular meshwork could not be seen in the primary position without indentation (Scheie grade 3 or 4)
Flow and timing	Eyes which were excluded or had uninterpretable results were not reported. The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Conflict of interest:Dr Wong has received financial support and honoraria for travel to conferences from Carl Zeiss Meditec and Heidelberg Engineering. Dr Friedman has received an instrument loan and has been a consultant for Carl Zeiss Meditec. Dr T. Aung has received grant funding as well as financial support and honoraria for travel to conferences from Carl Zeiss Meditec Patients who had undergone peripheral iridotomy were not excluded

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**High**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		

Wong 2009a (*Continued*)

If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Wu 2011

Study characteristics	
Patient sampling	Prospective cross-sectional study. Subjects aged 50 years who did not have any ophthalmic symptoms were recruited from a government-run community polyclinic, they were systematically sampled (every fifth patient registered at the polyclinic) and examined between December of 2005 to June of 2006. Only data from the right eye was analysed
Patient characteristics and setting	Sample size: 1922 eyes (317 narrow angle and 1605 open angle) Age: mean (SD), 63±7.9 years Sex: 1007 (52.4%) female Setting: primary care Country: Singapore Ethnicity: 1717 (89.3%) Chinese, 39 Malay (2%), 142 Indian (7.4%), 24 others (1.2%) Exclusions: history of glaucoma, previous intraocular surgery, previous laser treatment, penetrating

Wu 2011 (*Continued*)

	eye injury, or corneal disorders preventing anterior chamber assessment were excluded
Index tests	**AS-OCT:** time domain,Visante; Carl Zeiss Meditec, California. Scans were centered on the pupil and were obtained along the horizontal axis (0°-180°) using the standard anterior segment single-scan protocol. The optimal thresholds was derived from the study data examining ACA and ACV
Target condition and reference standard(s)	An eye was considered to have narrow angles if the posterior pigmented trabecular meshwork was not visible for at least 180 degrees on non-indentation gonioscopy with the eye in the primary position
Flow and timing	There were 2047 participants originally studied, 125 (6.1%) were excluded from analysis for the following reasons: 5 subjects (0.2%) could not undergo gonioscopy, 63 subjects (3.1%) could not complete AS-OCT examination or had poor-quality AS-OCT images, and 57 subjects (2.8%) had Zhongshan Angle Assessment Program software delineation errors.The index test and reference standard were conducted on the same occasion
Comparative	
Notes	Conflict of interest: Dr Aung has received research funding, travel support, and honoraria from Carl Zeiss Meditec. Dr Friedman has received an instrument loan from Carl Zeiss Meditec.

Methodological quality

Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Yes		
		Low	**Low**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		

Wu 2011 (*Continued*)

		High	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Yu 1995

Study characteristics	
Patient sampling	Prospective cross sectional study, 20% random sample taken from a population over 50 years old from the Doumen county of the Guangdong province in November 1995. Both eyes were included in the analysis
Patient characteristics and setting	Sample size: 390 eyes (72 narrow angle and 318 open angle) Age: not reported Sex: not reported Setting: primary care Country: China Ethnicity: Chinese Exclusions: not reported
Index tests	**Flashlight:** flashlight beam was shown from the temporal side, a cut off using 1/4 (grade 2) or <1/4 (grade 1) nasal iris light band ratio were used

Yu 1995 (*Continued*)

Target condition and reference standard(s)	Gonioscopy using Shaffer's chamber angle grading ≤grade 2 was considered as narrow in the temporal quadrant (90 degrees)		
Flow and timing	There were no uninterpretable or excluded results reported. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflict of interest: no conflict of interest statement provided		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	Unclear		
		Unclear	**Low**
DOMAIN 2: Index Test Flashlight			
Were the index test results interpreted without knowledge of the results of the reference standard?	Unclear		
If a threshold was used, was it pre-specified?	No		
		High	**Unclear**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Unclear		

Yu 1995 (*Continued*)

		Unclear	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		
Did all patients receive a reference standard	Yes		
		Low	

Zhang 2014

Study characteristics	
Patient sampling	Prospective cross sectional study. All Handan eye study subjects aged 40 years or older participated in a 5-year follow-up examination between August and December 2012. Data from the right eye was analysed
Patient characteristics and setting	Sample size: 425 eyes (126 narrow angle and 299 open angle) Age: mean (SD), 56.9±10.1 years, (narrow angle 60.7±8.1; open angle 55.4±10.4) Sex: 270 (63.5%) female Setting: secondary care Country: China Ethnicity: Chinese Exclusions: cases that could confound the results of the ACA examinations, and broad PAS (>3 clock hours) that could influence the ACA configuration. Also if there was pre-existing ocular surface pathology, history of eye trauma, contact lens wear, previous ocular surgery, use of drops that could influence ACA, inability to fixate on the target, or general physical or mental impairments that precluded participation
Index tests	**LACD**: determined at the temporal limbus and graded as % categories: 0%, 5%, 15%, 25%, 40%, 75% and ≥ 100%. Cut off values used : ≤15%, ≤25% and ≤40% **SPAC**: measurements ranged from 1 to 12, with 1 representing the shallowest anterior chamber depth. Cut off values used: ≤5 and/or S or P; ≤6 and/or S or P and ACD **AS-OCT:** Time domain, Visante, Carl Zeiss Meditec AG (software version 1.0). A closed angle on AS-OCT was defined by contact between the iris and any part of the angle wall anterior to the scleral spur in 2 quadrants **Scheimpflug photography:** Pentacam, Oculus Inc, Wetzlar, Germany, optimal cut off values were derived form the study data for ACD, ACA and ACV
Target condition and reference standard(s)	Dynamic gonioscopic examination was carried with PACS diagnosed as ≥180 degrees of the posterior trabecular meshwork was not visible on static gonioscopy

Zhang 2014 (*Continued*)

Flow and timing	There were 431 participants originally studied, 6 participants were excluded due to inability to follow instructions or focus on the fixation light, or unwillingness to undergo gonioscopy. 425 eyes were included in the analysis. There were no uninterpretable results reported. The index test and reference standard were conducted on the same occasion		
Comparative			
Notes	Conflicts of interest: the authors declare no conflicts of interest Gonioscopy was performed on those with an LACD $\leq$ 40% and for 1 in 10 subjects (number 1, 11, 21, etc) registered per day when seen in clinic		
Methodological quality			
Item	**Authors' judgement**	**Risk of bias**	**Applicability concerns**
DOMAIN 1: Patient Selection			
Was a consecutive or random sample of patients enrolled?	Yes		
Was a case-control design avoided?	Yes		
Did the study avoid inappropriate exclusions?	No		
		High	**Unclear**
DOMAIN 2: Index Test LACD			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 2: Index Test Scheimpflug photography			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	No		

Zhang 2014 (*Continued*)

		High	**Low**
DOMAIN 2: Index Test AS-OCT			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 2: Index Test SPAC			
Were the index test results interpreted without knowledge of the results of the reference standard?	Yes		
If a threshold was used, was it pre-specified?	Yes		
		Low	**Low**
DOMAIN 3: Reference Standard			
Is the reference standards likely to correctly classify the target condition?	Yes		
Were the reference standard results interpreted without knowledge of the results of the index tests?	Yes		
		Low	**Low**
DOMAIN 4: Flow and Timing			
Was there an appropriate interval between index test and reference standard?	Yes		
Were all patients included in the analysis?	Yes		

Did all patients receive a reference standard	Yes		
		Low	

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Adegbehingbe 2007	No diagnostic information regarding index test reported
Alsbirk 1973	Review index test not present
Alsbirk 1982	2x2 diagnostic table can not be constructed (gonioscopy performed on those identified with a shallow anterior chamber on the index test)
Alsbirk 1986	2x2 diagnostic table can not be constructed (gonioscopy performed on those identified with a shallow anterior chamber on the index test)
Alsbirk 1988	2x2 diagnostic table can not be constructed (gonioscopy performed on those identified with a shallow anterior chamber on the index test)
Alsbirk 1992	2x2 diagnostic table can not be constructed
Alsbirk 1994	2x2 diagnostic table can not be constructed
Bai 2005	2x2 diagnostic table can not be constructed
Baskaran 2015	Cases were not diagnosed using the reference test
Bhartiya 2013	2x2 diagnostic table can not be constructed
Bonomi 2000	2x2 diagnostic table can not be constructed
Bosem 1992	No diagnostic information regarding index test reported
Bourne 2010	2x2 diagnostic table can not be constructed (gonioscopy not performed on all subjects)
Chong 2013	Correlation study, no threshold specified for index test for 2x2 table
Chong 2016	No diagnostic information regarding index test reported
Chuka-Okosa 2005	No diagnostic information regarding index test reported

(*Continued*)

Chung 1995	No diagnostic information regarding index test reported
Congdon 1999	No diagnostic information regarding index test reported
Dandona 2001	Commentary
Dawczynski 2007	No diagnostic information regarding index test reported
Drance 1973	Review index test not present
Foo 2011	No diagnostic information regarding index test reported
Foo 2012	No diagnostic information regarding index test reported
Forsius 1991	Review index test not present
Friedman 2008	2x2 diagnostic table can not be constructed
Guo 2015	No diagnostic information regarding index test reported
Hadziahmetovic 2014	No diagnostic information regarding index test reported
He 2012	Gonioscopy not the reference standard
Kalev-landoy 2007	2x2 diagnostic table can not be constructed (index test not reported for those diagnosed with open angles)
Kashiwagi 2006	All subjects had glaucoma
Kashiwagi 2013	2x2 diagnostic table can not be constructed
Khalil 1975	Review index test not present
Kim 2012	Review index test not present
Kochupurakal 2016	2x2 diagnostic table not possible (No. of diseased/non-diseased not reported)
Leung 2010	Ethnicities compared, no threshold specified for diagnostic test accuracy
Li 2014	Prevalence study
Liu 2011	2x2 diagnostic table can not be constructed
Lu 1980	Gonioscopy not the reference standard
Mani 2014	Diagnostic data could not be obtained

(*Continued*)

Matonti 2011	No diagnostic information regarding index test reported
Melese 2015	Novel algorithm for AS-OCT
Moghimi 2015	No controls or participants with open angles were examined
Moghimi 2017	No diagnostic information regarding index test reported
Moreno-Montanes 1992	Review index test not present
Mosler 2015	All subjects had glaucoma
Narayanaswamy 2013	Prevalence study, no diagnostic information regarding index test reported
Ni 2014	Novel algorithm for AS-OCT
Niemeyer 2014	No diagnostic information regarding index test reported
Nongpiur 2010	Novel algorithm for AS-OCT
Nongpiur 2013	Novel algorithm for AS-OCT
Nongpiur 2014	Novel algorithm for AS-OCT
Nongpiur 2017	Study design
Nuriyah 2010	Gonioscopy not the reference standard
Pakravan 2012	Target condition was not a narrow angle
Pekmezci 2009	2x2 diagnostic table not possible (No. of diseased/non-diseased not reported)
Quek 2012	2x2 diagnostic table can not be constructed
Ren 2005	No diagnostic information regarding index test reported
Rigi 2016	No diagnostic information regarding index test reported
Rojananuangnit 2016	No diagnostic information regarding index test reported
Rueda 2003	Not diagnostic information available
Sah 2007	Prevalence study, no diagnostic information regarding index test reported
Sakata 2007	Prevalence study, no diagnostic information regarding index test reported

(*Continued*)

Sasikumar 2011	No diagnostic information regarding index test reported
Scalamogna 2002	Not diagnostic information available
Shibata 1992	No diagnostic information regarding index test reported
Shikino 2016	No diagnostic information regarding index test reported
Sparks 1997	Gonioscopy not the reference standard
Talaspayeva 2015	No diagnostic information regarding index test reported
Tay 2015	All subjects had glaucoma
Tomoyose 2010	No diagnostic information regarding index test reported
Trueba 2010	Gonioscopy not the reference standard
Tun 2013	No diagnostic information regarding index test reported
Vargas 1973	Gonioscopy not the reference standard
Varma 2017	2x2 diagnostic table can not be constructed
Wang 2013	No diagnostic information regarding index test reported
Wang 2014	No diagnostic information regarding index test reported
Wang 2015	No diagnostic information regarding index test reported
Wong 2015	No diagnostic data available
Xie 2011	No diagnostic information regarding index test reported
Xu 2001	No diagnostic information regarding index test reported
Xu 2004	No diagnostic information regarding index test reported
Xu 2005	Gonioscopy not the reference standard
Xu 2008	No diagnostic information regarding index test reported
Xu 2009	No diagnostic information regarding index test reported
Xu 2011	No diagnostic information regarding index test reported

(*Continued*)

Yamamoto 2005	No diagnostic information regarding index test reported
Yamamoto 2009	2x2 diagnostic table can not be constructed
Ye 1995	Gonioscopy not the reference standard
Ye 1998	Gonioscopy not performed
Yip 2008	2x2 diagnostic table can not be constructed
Yu 1995a	Gonioscopy not performed
Yu 1996	Gonioscopy not the reference standard
Yu 1997	Health economic review
Yuan 2007	Prevalence study, no diagnostic information regarding index test reported
Zhang 2008	No diagnostic information regarding index test reported
Zhang 2010	No diagnostic information regarding index test reported
Zhao 2008	No diagnostic information regarding index test reported

DATA

Presented below are all the data for all of the tests entered into the review.

Tests. Data tables by test

Test	No. of studies	No. of participants
1 LACD 0%	4	2920
2 LACD ≤ 5%	4	2920
3 LACD ≤ 15%	5	3345
4 LACD ≤ 25%	9	5584
5 LACD ≤ 40%	3	2177
6 LACD < 25%	4	828
7 LACD > 25% to ≤ 50%	2	877
9 Flashlight grade 1	5	1188
10 Flashlight grade 2	3	848
11 SPAC ACD ≤ 2.8mm	1	425
12 SPAC S	1	120
13 SPAC S or P	3	2325
15 SPAC ≤ 5 and or S or P	3	2630
16 SPAC ≤ 6 and or S or P	1	425
17 SPAC grade ≤ 6	1	442
18 SPAC ≤ 5	3	4252
19 SPAC ≤ 4	1	2047
20 Scheimpflug photography ACD ≤ 1.93mm	1	64
21 Scheimpflug photography ACD ≤ 2.39mm	1	425
22 Scheimpflug photography ACD ≤ 2.27mm	1	73
23 Scheimpflug photography ACD ≤ 2.45mm	1	265
24 Scheimpflug photography ACD ≤ 2.50mm	1	78
25 Scheimpflug photography ACD ≤ 2.6mm	1	112
26 Scheimpflug photography ACD ≤ 2.58mm	1	39
27 Scheimpflug photography ACV ≤ 84mm^3	1	64
28 Scheimpflug photography ACV≤109mm^3	1	425
29 Scheimpflug photography ACV ≤ 113mm^3	1	265
30 Scheimpflug photography ACV ≤ 124 mm^3	1	78
31 Scheimpflug photography ACA ≤ 20 °	1	112

32 Scheimpflug photography ACA ≤ 22.4°	1	64
33 Scheimpflug photography ACA ≤ 29.5 °	1	73
34 Scheimpflug photography ACA ≤ 30.7°	1	78
35 Scheimpflug photography ACA ≤ 31.7°	1	425
37 AS-OCT (subjective judgement)	12	5466
38 AS-OCT ACD ≤ 2.50mm	1	78
39 AS-OCT ACD	1	202
40 AS-OCT ACD ≤ 2.45mm	1	73
41 AS-OCT AC Angle ≤ 20.7°	1	78
43 AS-OCT AC Angle < 22°	1	276
44 AS-OCT AC Angle ≤ 31.8°	1	73
45 AS-OCT AC Area ≤ 17.23mm²	1	1780
46 AS-OCT AC Area ≤ 17.9mm²	1	1922
47 AS-OCT LV	1	202
49 AS-OCT LV ≥ 0.576mm	1	1780
50 AS-OCT LV 0.613	1	278
52 AS-OCT ITC index (≥ 2 quadrants closed) >35%	1	140
53 AS-OCT ITC index (≥ 2 quadrants closed) >50%	1	140
54 AS-OCT ITC index (≥ 2 quadrants closed) >70%	1	140
55 AS-OCT ACV ≤ 110.5mm^3	1	1780
56 AS-OCT ACV ≤ 116mm^3	1	1922
57 AS-OCT AOD500 0.191mm	1	31
60 AS-OCT AOD500 ≤ 0.29mm	1	276
62 AS-OCT Nasal AOD500	1	69
63 AS-OCT Nasal AOD500 ≤ 0.177mm	1	1465
65 AS-OCT Nasal AOD500 ≤ 0.34mm	1	265
66 AS-OCT Nasal AOD750	1	69
67 AS-OCT Nasal AOD750 ≤ 0.225mm	1	1465
69 AS-OCT Temporal AOD500	1	69
70 AS-OCT Temporal AOD500 ≤ 0.191mm²	1	1465
72 AS-OCT Temporal AOD500 ≤ 0.32mm	1	265
73 AS-OCT Temporal AOD750	1	69
74 AS-OCT Temporal AOD750 0.17mm	1	2047
75 AS-OCT Temporal AOD750 0.24mm	1	2047

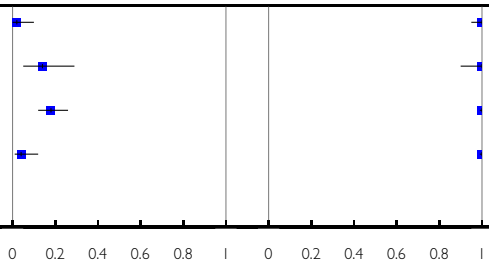
76 AS-OCT Temporal AOD750 ≤ 0.258mm	1	1465
78 AS-OCT ARA 500 0.12mm²	1	31
79 AS-OCT ARA 750 0.17mm²	1	31
81 AS-OCT Nasal ARA750 ≤ 0.154mm²	1	1465
83 AS-OCT Temporal ARA750 ≤ 0.191mm²	1	1465
84 AS-OCT TISA500 0.11mm²	1	31
85 AS-OCT TISA750 0.17mm²	1	31
86 AS-OCT Nasal TISA500	1	69
87 AS-OCT Nasal TISA500 ≤0.2mm²	1	265
88 AS-OCT Nasal TISA500 ≤ 0.76mm²	1	1465
89 AS-OCT Nasal TISA750	1	69
90 AS-OCT Nasal TISA750 ≤ 0.134mm²	1	1465
91 AS-OCT Temporal TISA750	1	69
92 AS-OCT Temporal TISA500	1	69
93 AS-OCT Temporal TISA 500 ≤ 0.21mm²	1	265
94 AS-OCT Temporal TISA750 ≤ 0.151mm²	1	1465
95 AS-OCT Temporal TISA500 ≤ 0.103mm²	1	1465

Test 1. LACD 0%.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 1 LACD 0%

Study	TP	FP	FN	TN	Sensitivity	Specificity
Baskaran 2007	1	0	52	67	0.02 [0.00, 0.10]	1.00 [0.95, 1.00]
Dabasia 2015	6	0	36	36	0.14 [0.05, 0.29]	1.00 [0.90, 1.00]
Foster 2000	23	6	106	1497	0.18 [0.12, 0.26]	1.00 [0.99, 1.00]
Nolan 2006	3	2	68	1017	0.04 [0.01, 0.12]	1.00 [0.99, 1.00]

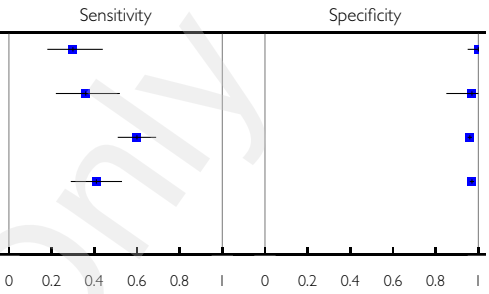


Test 2. LACD ≤ 5%.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 2 LACD ≤ 5%

Study	TP	FP	FN	TN	Sensitivity	Specificity
Baskaran 2007	16	0	37	67	0.30 [0.18, 0.44]	1.00 [0.95, 1.00]
Dabasia 2015	15	1	27	35	0.36 [0.22, 0.52]	0.97 [0.85, 1.00]
Foster 2000	78	58	51	1445	0.60 [0.51, 0.69]	0.96 [0.95, 0.97]
Nolan 2006	29	29	42	990	0.41 [0.29, 0.53]	0.97 [0.96, 0.98]

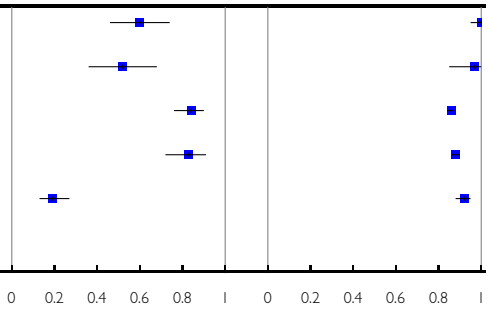


Test 3. LACD ≤ 15%.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 3 LACD ≤ 15%

Study	TP	FP	FN	TN	Sensitivity	Specificity
Baskaran 2007	32	0	21	67	0.60 [0.46, 0.74]	1.00 [0.95, 1.00]
Dabasia 2015	22	1	20	35	0.52 [0.36, 0.68]	0.97 [0.85, 1.00]
Foster 2000	108	215	21	1288	0.84 [0.76, 0.90]	0.86 [0.84, 0.87]
Nolan 2006	59	121	12	898	0.83 [0.72, 0.91]	0.88 [0.86, 0.90]
Zhang 2014	24	24	102	275	0.19 [0.13, 0.27]	0.92 [0.88, 0.95]

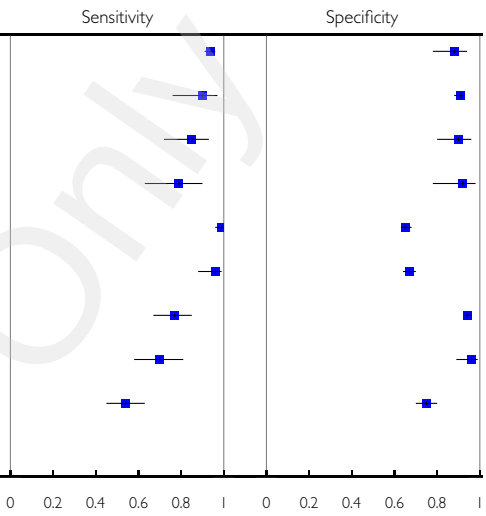


Test 4. LACD ≤ 25%.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 4 LACD ≤ 25%

Study	TP	FP	FN	TN	Sensitivity	Specificity
Andrews 2012	348	9	22	63	0.94 [0.91, 0.96]	0.88 [0.78, 0.94]
Ashaye 2003	36	42	4	408	0.90 [0.76, 0.97]	0.91 [0.88, 0.93]
Baskaran 2007	45	7	8	60	0.85 [0.72, 0.93]	0.90 [0.80, 0.96]
Dabasia 2015	33	3	9	33	0.79 [0.63, 0.90]	0.92 [0.78, 0.98]
Foster 2000	128	519	1	984	0.99 [0.96, 1.00]	0.65 [0.63, 0.68]
Nolan 2006	68	337	3	682	0.96 [0.88, 0.99]	0.67 [0.64, 0.70]
Okabe 1991	72	61	22	1014	0.77 [0.67, 0.85]	0.94 [0.93, 0.96]
Wirbelauer 2005	45	3	19	71	0.70 [0.58, 0.81]	0.96 [0.89, 0.99]
Zhang 2014	68	75	58	224	0.54 [0.45, 0.63]	0.75 [0.70, 0.80]

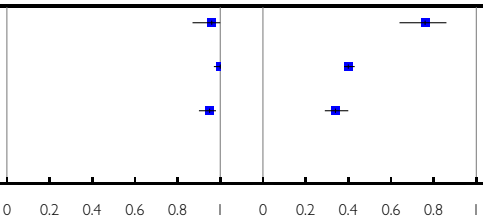


Test 5. LACD ≤ 40%.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 5 LACD ≤ 40%

Study	TP	FP	FN	TN	Sensitivity	Specificity
Baskaran 2007	51	16	2	51	0.96 [0.87, 1.00]	0.76 [0.64, 0.86]
Foster 2000	129	898	0	605	1.00 [0.97, 1.00]	0.40 [0.38, 0.43]
Zhang 2014	120	197	6	102	0.95 [0.90, 0.98]	0.34 [0.29, 0.40]

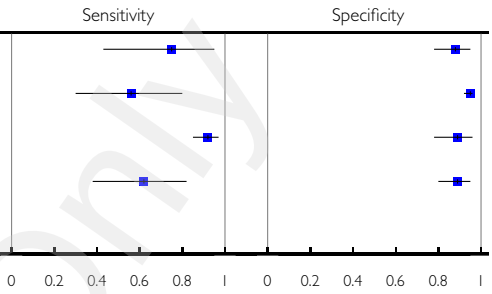


Test 6. LACD < 25%.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 6 LACD < 25%

Study	TP	FP	FN	TN	Sensitivity	Specificity
Campbell 2015	9	8	3	60	0.75 [0.43, 0.95]	0.88 [0.78, 0.95]
Congdon 1996	9	26	7	461	0.56 [0.30, 0.80]	0.95 [0.92, 0.96]
Park 2011	86	6	7	50	0.92 [0.85, 0.97]	0.89 [0.78, 0.96]
Thomas 1996	13	8	8	67	0.62 [0.38, 0.82]	0.89 [0.80, 0.95]

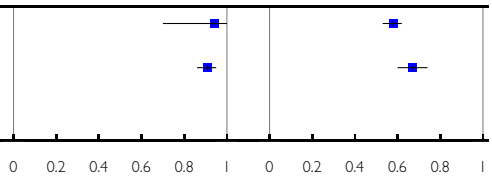


Test 7. LACD > 25% to ≤ 50%.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 7 LACD > 25% to ≤ 50%

Study	TP	FP	FN	TN	Sensitivity	Specificity
Congdon 1996	15	205	1	282	0.94 [0.70, 1.00]	0.58 [0.53, 0.62]
Ko 2015	181	57	18	118	0.91 [0.86, 0.95]	0.67 [0.60, 0.74]

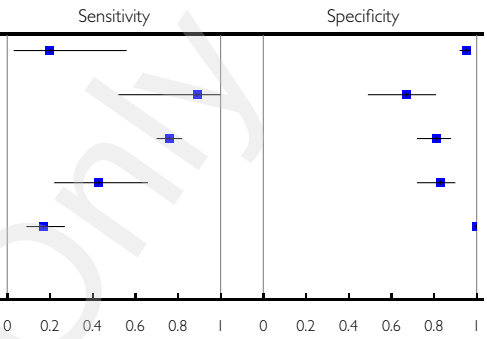


Test 9. Flashlight grade 1.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 9 Flashlight grade 1

Study	TP	FP	FN	TN	Sensitivity	Specificity
Congdon 1996	2	19	8	333	0.20 [0.03, 0.56]	0.95 [0.92, 0.97]
Gracitelli 2014	8	12	1	24	0.89 [0.52, 1.00]	0.67 [0.49, 0.81]
He 2007	142	21	44	88	0.76 [0.70, 0.82]	0.81 [0.72, 0.88]
Thomas 1996	9	13	12	62	0.43 [0.22, 0.66]	0.83 [0.72, 0.90]
Yu 1995	12	0	60	318	0.17 [0.09, 0.27]	1.00 [0.99, 1.00]

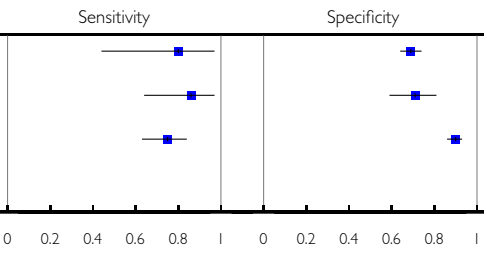


Test 10. Flashlight grade 2.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 10 Flashlight grade 2

Study	TP	FP	FN	TN	Sensitivity	Specificity
Congdon 1996	8	109	2	243	0.80 [0.44, 0.97]	0.69 [0.64, 0.74]
Thomas 1996	18	22	3	53	0.86 [0.64, 0.97]	0.71 [0.59, 0.81]
Yu 1995	54	32	18	286	0.75 [0.63, 0.84]	0.90 [0.86, 0.93]

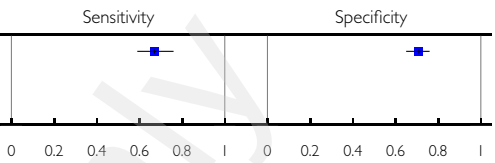


Test 11. SPAC ACD ≤ 2.8mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 11 SPAC ACD ≤ 2.8mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Zhang 2014	85	87	41	212	0.67 [0.59, 0.76]	0.71 [0.65, 0.76]

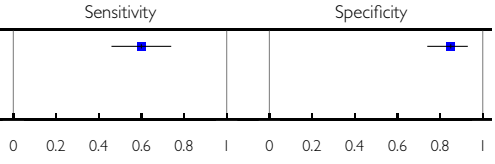


Test 12. SPAC S.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 12 SPAC S

Study	TP	FP	FN	TN	Sensitivity	Specificity
Baskaran 2007	32	10	21	57	0.60 [0.46, 0.74]	0.85 [0.74, 0.93]

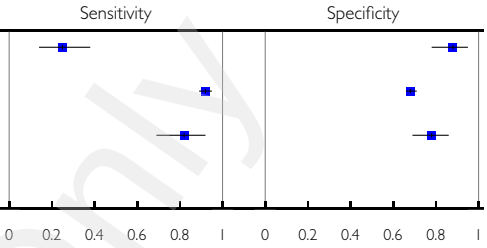


Test 13. SPAC S or P.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 13 SPAC S or P

Study	TP	FP	FN	TN	Sensitivity	Specificity
Baskaran 2007	13	8	40	59	0.25 [0.14, 0.38]	0.88 [0.78, 0.95]
Lavanya 2008	390	517	32	1113	0.92 [0.89, 0.95]	0.68 [0.66, 0.71]
Wong 2009	42	22	9	80	0.82 [0.69, 0.92]	0.78 [0.69, 0.86]

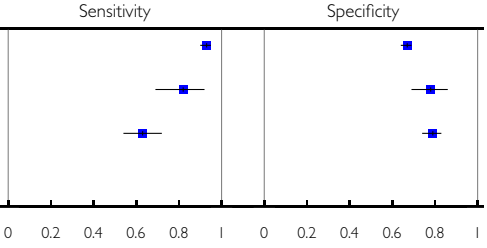


Test 15. SPAC $\leq$ 5 and or S or P.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 15 SPAC $\leq$ 5 and or S or P

Study	TP	FP	FN	TN	Sensitivity	Specificity
Lavanya 2008	392	543	30	1087	0.93 [0.90, 0.95]	0.67 [0.64, 0.69]
Wong 2009	42	22	9	80	0.82 [0.69, 0.92]	0.78 [0.69, 0.86]
Zhang 2014	80	63	46	236	0.63 [0.54, 0.72]	0.79 [0.74, 0.83]

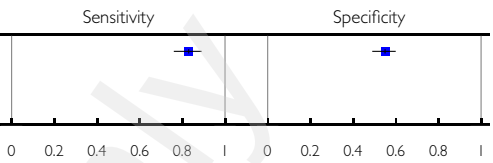


Test 16. SPAC ≤ 6 and or S or P.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 16 SPAC ≤ 6 and or S or P

Study	TP	FP	FN	TN	Sensitivity	Specificity
Zhang 2014	105	136	21	163	0.83 [0.76, 0.89]	0.55 [0.49, 0.60]

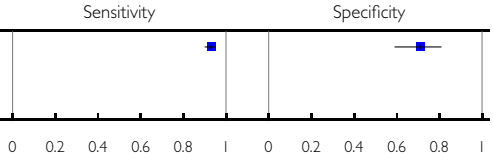


Test 17. SPAC grade ≤ 6.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 17 SPAC grade ≤ 6

Study	TP	FP	FN	TN	Sensitivity	Specificity
Andrews 2012	344	21	26	51	0.93 [0.90, 0.95]	0.71 [0.59, 0.81]

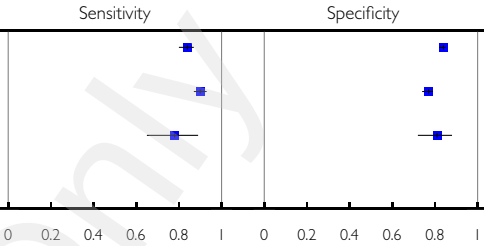


Test 18. SPAC ≤ 5.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 18 SPAC ≤ 5

Study	TP	FP	FN	TN	Sensitivity	Specificity
Chang 2011	330	269	65	1383	0.84 [0.80, 0.87]	0.84 [0.82, 0.85]
Lavanya 2008	380	381	42	1249	0.90 [0.87, 0.93]	0.77 [0.74, 0.79]
Wong 2009	40	19	11	83	0.78 [0.65, 0.89]	0.81 [0.72, 0.88]

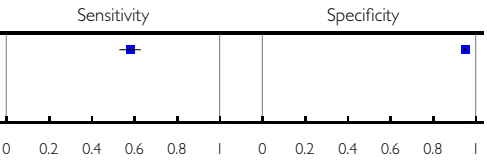


Test 19. SPAC ≤ 4.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 19 SPAC ≤ 4

Study	TP	FP	FN	TN	Sensitivity	Specificity
Chang 2011	228	83	167	1569	0.58 [0.53, 0.63]	0.95 [0.94, 0.96]

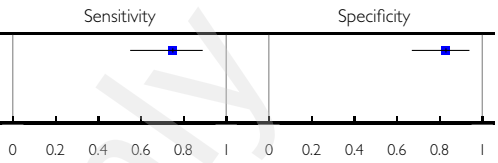


Test 20. Scheimpflug photography ACD ≤ 1.93mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 20 Scheimpflug photography ACD ≤ 1.93mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Rossi 2012	21	6	7	30	0.75 [0.55, 0.89]	0.83 [0.67, 0.94]

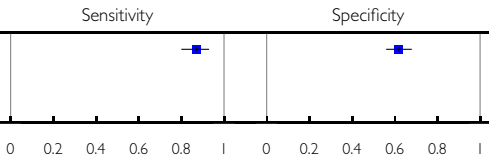


Test 21. Scheimpflug photography ACD ≤ 2.39mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 21 Scheimpflug photography ACD ≤ 2.39mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Zhang 2014	110	113	16	186	0.87 [0.80, 0.93]	0.62 [0.56, 0.68]

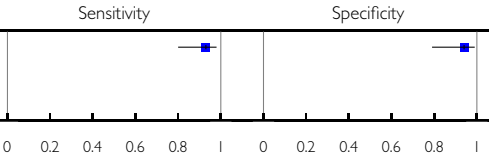


Test 22. Scheimpflug photography ACD ≤ 2.27mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 22 Scheimpflug photography ACD ≤ 2.27mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Hong 2009	38	2	3	30	0.93 [0.80, 0.98]	0.94 [0.79, 0.99]

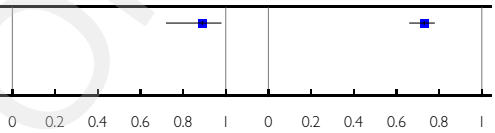


Test 23. Scheimpflug photography ACD ≤ 2.45mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 23 Scheimpflug photography ACD ≤ 2.45mm

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Grewal 2011	25	65	3	172	0.89 [0.72, 0.98]	0.73 [0.66, 0.78]		

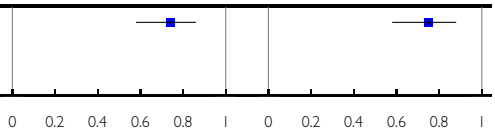


Test 24. Scheimpflug photography ACD ≤ 2.50mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 24 Scheimpflug photography ACD ≤ 2.50mm

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Dabasia 2015	31	9	11	27	0.74 [0.58, 0.86]	0.75 [0.58, 0.88]		

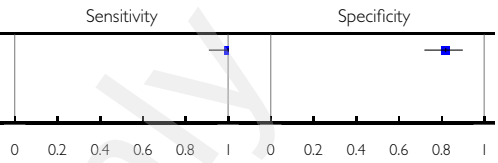


Test 25. Scheimpflug photography ACD ≤ 2.6mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 25 Scheimpflug photography ACD ≤ 2.6mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Alonso 2010	38	13	0	61	1.00 [0.91, 1.00]	0.82 [0.72, 0.90]

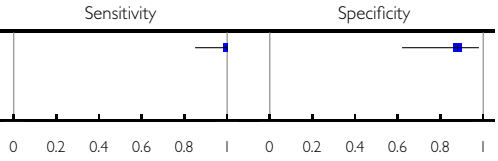


Test 26. Scheimpflug photography ACD ≤ 2.58mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 26 Scheimpflug photography ACD ≤ 2.58mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Kurita 2009	23	2	0	14	1.00 [0.85, 1.00]	0.88 [0.62, 0.98]

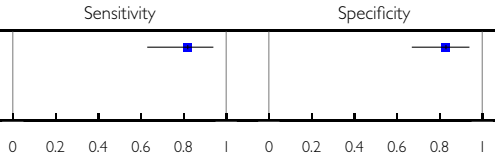


Test 27. Scheimpflug photography ACV ≤ 84mm^3.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 27 Scheimpflug photography ACV ≤ 84mm^3

Study	TP	FP	FN	TN	Sensitivity	Specificity
Rossi 2012	23	6	5	30	0.82 [0.63, 0.94]	0.83 [0.67, 0.94]

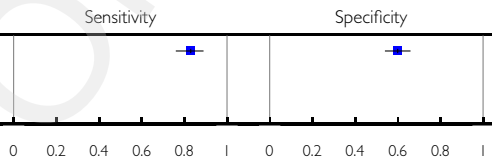


Test 28. Scheimpflug photography ACV≤109mm^3.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 28 Scheimpflug photography ACV≤109mm^3

Study	TP	FP	FN	TN	Sensitivity	Specificity
Zhang 2014	105	119	21	180	0.83 [0.76, 0.89]	0.60 [0.54, 0.66]

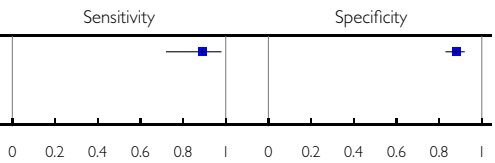


Test 29. Scheimpflug photography ACV ≤ 113mm^3.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 29 Scheimpflug photography ACV ≤ 113mm^3

Study	TP	FP	FN	TN	Sensitivity	Specificity
Grewal 2011	25	28	3	209	0.89 [0.72, 0.98]	0.88 [0.83, 0.92]

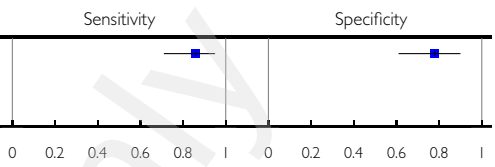


Test 30. Scheimpflug photography ACV $\leq$ 124 mm^3.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 30 Scheimpflug photography ACV $\leq$ 124 mm^3

Study	TP	FP	FN	TN	Sensitivity	Specificity
Dabasia 2015	36	8	6	28	0.86 [0.71, 0.95]	0.78 [0.61, 0.90]

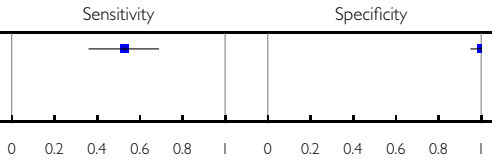


Test 31. Scheimpflug photography ACA $\leq$ 20 °.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 31 Scheimpflug photography ACA $\leq$ 20

Study	TP	FP	FN	TN	Sensitivity	Specificity
Alonso 2010	20	0	18	74	0.53 [0.36, 0.69]	1.00 [0.95, 1.00]

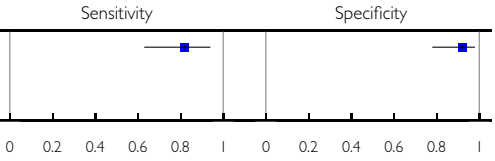


Test 32. Scheimpflug photography ACA $\leq$ 22.4°.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 32 Scheimpflug photography ACA $\leq$ 22.4

Study	TP	FP	FN	TN	Sensitivity	Specificity
Rossi 2012	23	3	5	33	0.82 [0.63, 0.94]	0.92 [0.78, 0.98]

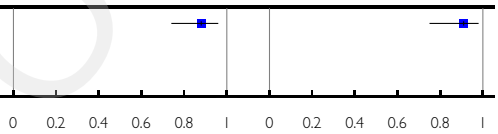


Test 33. Scheimpflug photography ACA ≤ 29.5 °.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 33 Scheimpflug photography ACA ≤ 29.5

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Hong 2009	36	3	5	29	0.88 [0.74, 0.96]	0.91 [0.75, 0.98]		

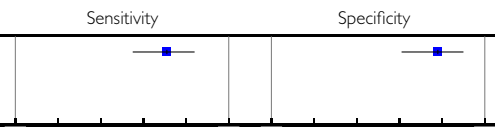


Test 34. Scheimpflug photography ACA ≤ 30.7°.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 34 Scheimpflug photography ACA ≤ 30.7

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Dabasia 2015	30	8	12	28	0.71 [0.55, 0.84]	0.78 [0.61, 0.90]		

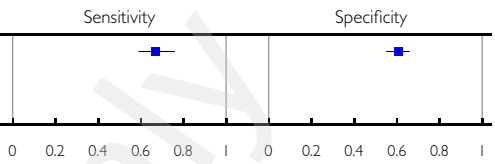


Test 35. Scheimpflug photography ACA ≤ 31.7°.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 35 Scheimpflug photography ACA ≤ 31.7

Study	TP	FP	FN	TN	Sensitivity	Specificity
Zhang 2014	85	118	41	181	0.67 [0.59, 0.76]	0.61 [0.55, 0.66]

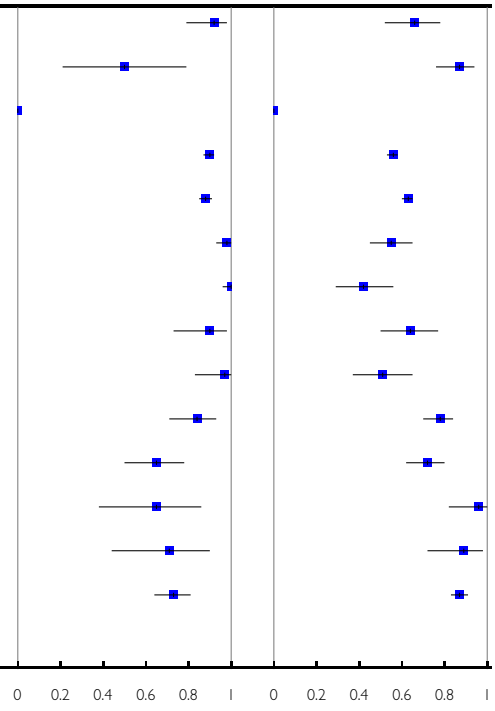


Test 37. AS-OCT (subjective judgement).

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 37 AS-OCT (subjective judgement)

Study	TP	FP	FN	TN	Sensitivity	Specificity
Baskaran 2012	36	20	3	38	0.92 [0.79, 0.98]	0.66 [0.52, 0.78]
Campbell 2015	6	9	6	59	0.50 [0.21, 0.79]	0.87 [0.76, 0.94]
Chang 2011	0	0	0	0	0.0 [0.0, 0.0]	0.0 [0.0, 0.0]
Khor 2010	468	592	54	739	0.90 [0.87, 0.92]	0.56 [0.53, 0.58]
Lavanya 2008	373	605	49	1025	0.88 [0.85, 0.91]	0.63 [0.60, 0.65]
Nolan 2007	97	45	2	56	0.98 [0.93, 1.00]	0.55 [0.45, 0.65]
Park 2011	93	32	0	23	1.00 [0.96, 1.00]	0.42 [0.29, 0.56]
Sakata 2010	27	19	3	34	0.90 [0.73, 0.98]	0.64 [0.50, 0.77]
Sakata 2010	29	26	1	27	0.97 [0.83, 1.00]	0.51 [0.37, 0.65]
Tun 2017	42	34	8	118	0.84 [0.71, 0.93]	0.78 [0.70, 0.84]
Wong 2009	33	29	18	73	0.65 [0.50, 0.78]	0.72 [0.62, 0.80]
Wong 2009a	11	1	6	27	0.65 [0.38, 0.86]	0.96 [0.82, 1.00]
Wong 2009a	12	3	5	25	0.71 [0.44, 0.90]	0.89 [0.72, 0.98]
Zhang 2014	92	38	34	261	0.73 [0.64, 0.81]	0.87 [0.83, 0.91]

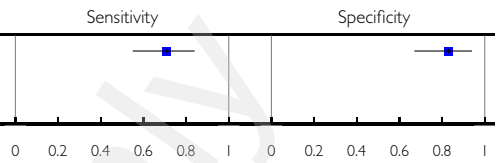


Test 38. AS-OCT ACD ≤ 2.50mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 38 AS-OCT ACD ≤ 2.50mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Dabasia 2015	30	6	12	30	0.71 [0.55, 0.84]	0.83 [0.67, 0.94]

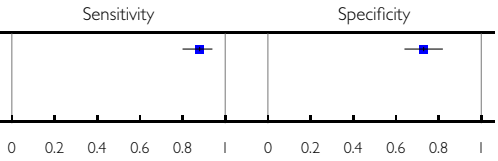


Test 39. AS-OCT ACD.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 39 AS-OCT ACD

Study	TP	FP	FN	TN	Sensitivity	Specificity
Kim 2014	89	27	12	74	0.88 [0.80, 0.94]	0.73 [0.64, 0.82]

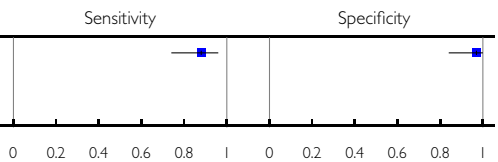


Test 40. AS-OCT ACD ≤ 2.45mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 40 AS-OCT ACD ≤ 2.45mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Hong 2009	36	1	5	31	0.88 [0.74, 0.96]	0.97 [0.84, 1.00]

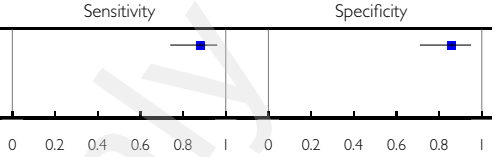


Test 41. AS-OCT AC Angle ≤ 20.7°.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 41 AS-OCT AC Angle ≤ 20.7

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Dabasia 2015	37	5	5	31	0.88 [0.74, 0.96]	0.86 [0.71, 0.95]		

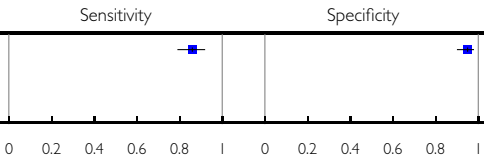


Test 43. AS-OCT AC Angle < 22°.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 43 AS-OCT AC Angle < 22

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Wirbelauer 2005	105	8	17	146	0.86 [0.79, 0.92]	0.95 [0.90, 0.98]		

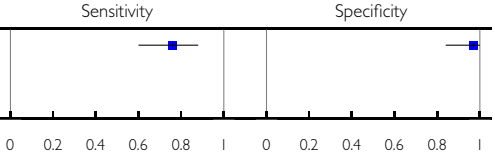


Test 44. AS-OCT AC Angle ≤ 31.8°.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 44 AS-OCT AC Angle ≤ 31.8

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Hong 2009	31	1	10	31	0.76 [0.60, 0.88]	0.97 [0.84, 1.00]		

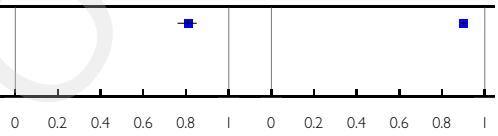


Test 45. AS-OCT AC Area ≤ 17.23mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 45 AS-OCT AC Area ≤ 17.23mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Tan 2012	255	144	60	1321	0.81 [0.76, 0.85]	0.90 [0.89, 0.92]

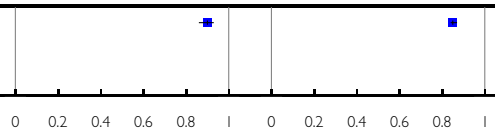


Test 46. AS-OCT AC Area ≤ 17.9mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 46 AS-OCT AC Area ≤ 17.9mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Wu 2011	285	233	32	1372	0.90 [0.86, 0.93]	0.85 [0.84, 0.87]

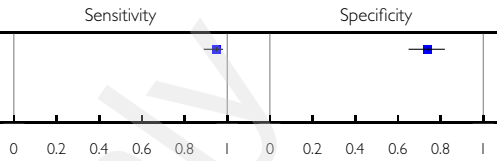


Test 47. AS-OCT LV.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 47 AS-OCT LV

Study	TP	FP	FN	TN	Sensitivity	Specificity
Kim 2014	96	26	5	75	0.95 [0.89, 0.98]	0.74 [0.65, 0.82]

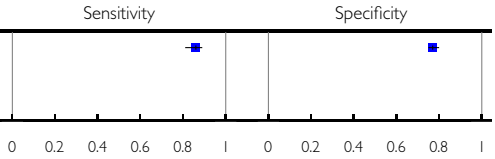


Test 49. AS-OCT LV ≥ 0.576mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 49 AS-OCT LV ≥ 0.576mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Tan 2012	270	330	45	1135	0.86 [0.81, 0.89]	0.77 [0.75, 0.80]

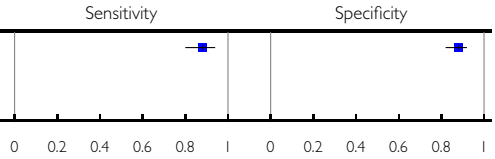


Test 50. AS-OCT LV 0.613.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 50 AS-OCT LV 0.613

Study	TP	FP	FN	TN	Sensitivity	Specificity
Nongpiur 2011	90	21	12	155	0.88 [0.80, 0.94]	0.88 [0.82, 0.92]

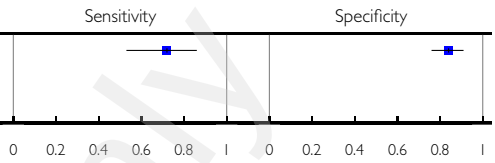


Test 52. AS-OCT ITC index (≥ 2 quadrants closed) >35%.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 52 AS-OCT ITC index (≥ 2 quadrants closed) >35%

Study	TP	FP	FN	TN	Sensitivity	Specificity
Baskaran 2013	23	17	9	91	0.72 [0.53, 0.86]	0.84 [0.76, 0.91]

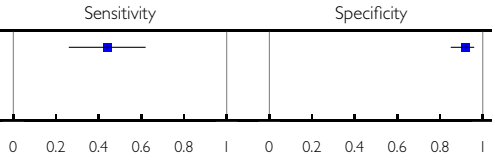


Test 53. AS-OCT ITC index (≥ 2 quadrants closed) >50%.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 53 AS-OCT ITC index (≥ 2 quadrants closed) >50%

Study	TP	FP	FN	TN	Sensitivity	Specificity
Baskaran 2013	14	9	18	99	0.44 [0.26, 0.62]	0.92 [0.85, 0.96]

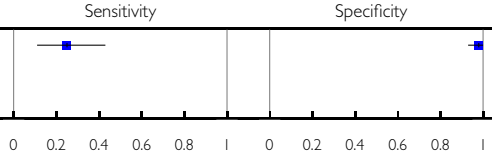


Test 54. AS-OCT ITC index (≥ 2 quadrants closed) >70%.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 54 AS-OCT ITC index (≥ 2 quadrants closed) >70%

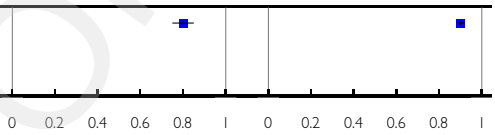
Study	TP	FP	FN	TN	Sensitivity	Specificity
Baskaran 2013	8	2	24	106	0.25 [0.11, 0.43]	0.98 [0.93, 1.00]



Test 55. AS-OCT ACV ≤ 110.5mm^3.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

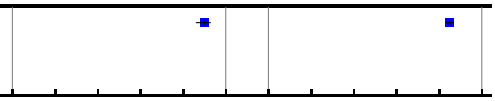
Test: 55 AS-OCT ACV ≤ 110.5mm^3

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Tan 2012	253	142	62	1323	0.80 [0.75, 0.85]	0.90 [0.89, 0.92]		

Test 56. AS-OCT ACV ≤ 116mm^3.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 56 AS-OCT ACV ≤ 116mm^3

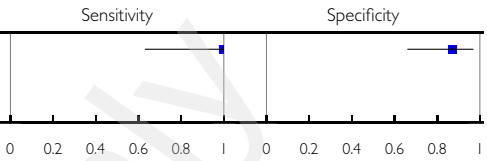
Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Wu 2011	286	239	31	1366	0.90 [0.86, 0.93]	0.85 [0.83, 0.87]		

Test 57. AS-OCT AOD500 0.191mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 57 AS-OCT AOD500 0.191mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Radhakrishnan 2005	8	3	0	20	1.00 [0.63, 1.00]	0.87 [0.66, 0.97]

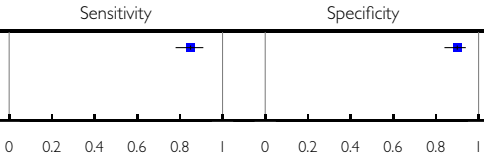


Test 60. AS-OCT AOD500 $\leq$ 0.29mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 60 AS-OCT AOD500 $\leq$ 0.29mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Wirbelauer 2005	104	15	18	139	0.85 [0.78, 0.91]	0.90 [0.84, 0.94]

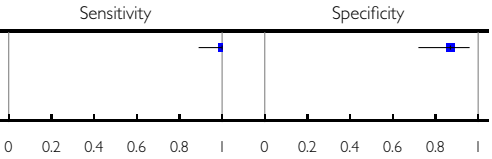


Test 62. AS-OCT Nasal AOD500.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 62 AS-OCT Nasal AOD500

Study	TP	FP	FN	TN	Sensitivity	Specificity
Melese 2016	31	5	0	33	1.00 [0.89, 1.00]	0.87 [0.72, 0.96]

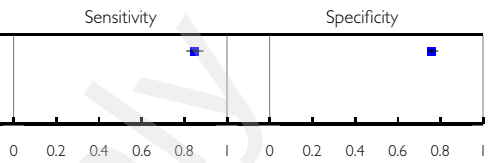


Test 63. AS-OCT Nasal AOD500 ≤ 0.177mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 63 AS-OCT Nasal AOD500 ≤ 0.177mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Narayanaswamy 2010	268	275	47	875	0.85 [0.81, 0.89]	0.76 [0.74, 0.79]

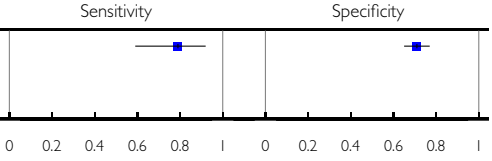


Test 65. AS-OCT Nasal AOD500 ≤ 0.34mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 65 AS-OCT Nasal AOD500 ≤ 0.34mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Grewal 2011	22	68	6	169	0.79 [0.59, 0.92]	0.71 [0.65, 0.77]

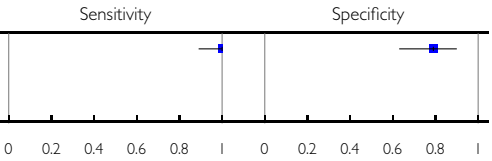


Test 66. AS-OCT Nasal AOD750.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 66 AS-OCT Nasal AOD750

Study	TP	FP	FN	TN	Sensitivity	Specificity
Melese 2016	31	8	0	30	1.00 [0.89, 1.00]	0.79 [0.63, 0.90]

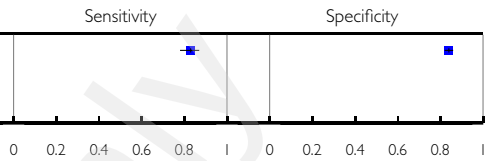


Test 67. AS-OCT Nasal AOD750 ≤ 0.225mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 67 AS-OCT Nasal AOD750 ≤ 0.225mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Narayanaswamy 2010	260	184	55	966	0.83 [0.78, 0.87]	0.84 [0.82, 0.86]

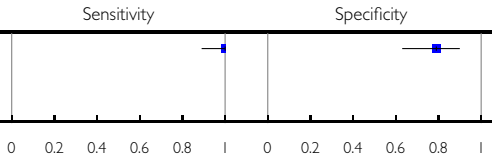


Test 69. AS-OCT Temporal AOD500.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 69 AS-OCT Temporal AOD500

Study	TP	FP	FN	TN	Sensitivity	Specificity
Melese 2016	31	8	0	30	1.00 [0.89, 1.00]	0.79 [0.63, 0.90]

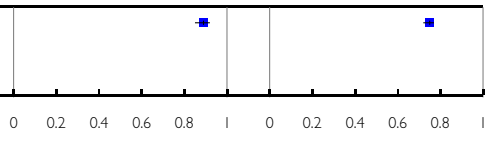


Test 70. AS-OCT Temporal AOD500 ≤ 0.191mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 70 AS-OCT Temporal AOD500 ≤ 0.191mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Narayanaswamy 2010	280	292	35	858	0.89 [0.85, 0.92]	0.75 [0.72, 0.77]

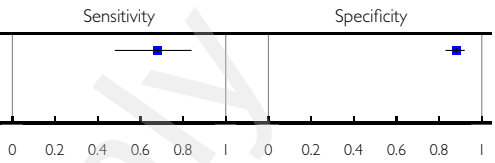


Test 72. AS-OCT Temporal AOD500 ≤ 0.32mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 72 AS-OCT Temporal AOD500 ≤ 0.32mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Grewal 2011	19	28	9	209	0.68 [0.48, 0.84]	0.88 [0.83, 0.92]

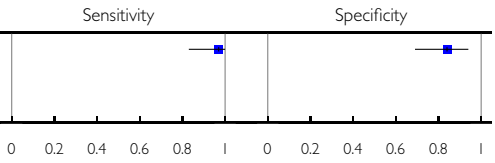


Test 73. AS-OCT Temporal AOD750.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 73 AS-OCT Temporal AOD750

Study	TP	FP	FN	TN	Sensitivity	Specificity
Melese 2016	30	6	1	32	0.97 [0.83, 1.00]	0.84 [0.69, 0.94]

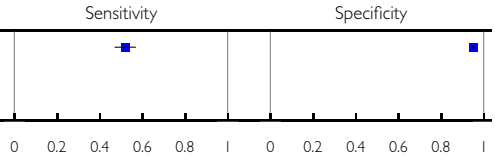


Test 74. AS-OCT Temporal AOD750 0.17mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 74 AS-OCT Temporal AOD750 0.17mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Chang 2011	206	83	189	1569	0.52 [0.47, 0.57]	0.95 [0.94, 0.96]

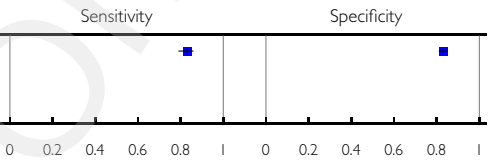


Test 75. AS-OCT Temporal AOD750 0.24mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 75 AS-OCT Temporal AOD750 0.24mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Chang 2011	327	276	68	1376	0.83 [0.79, 0.86]	0.83 [0.81, 0.85]

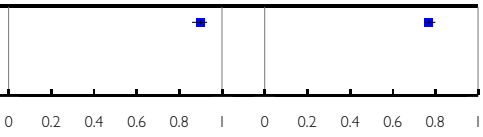


Test 76. AS-OCT Temporal AOD750 $\leq$ 0.258mm.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 76 AS-OCT Temporal AOD750 $\leq$ 0.258mm

Study	TP	FP	FN	TN	Sensitivity	Specificity
Narayanaswamy 2010	284	260	31	890	0.90 [0.86, 0.93]	0.77 [0.75, 0.80]

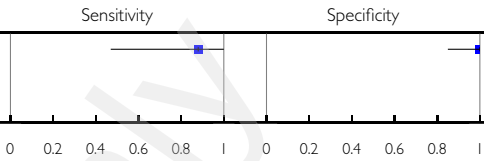


Test 78. AS-OCT ARA 500 0.12mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 78 AS-OCT ARA 500 0.12mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Radhakrishnan 2005	7	0	1	23	0.88 [0.47, 1.00]	1.00 [0.85, 1.00]

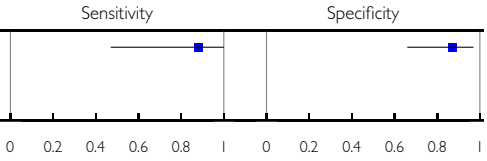


Test 79. AS-OCT ARA 750 0.17mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 79 AS-OCT ARA 750 0.17mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Radhakrishnan 2005	7	3	1	20	0.88 [0.47, 1.00]	0.87 [0.66, 0.97]

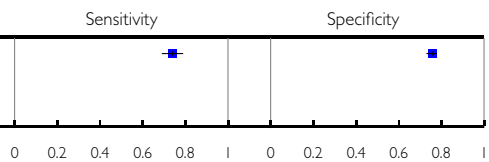


Test 81. AS-OCT Nasal ARA750 ≤ 0.154mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 81 AS-OCT Nasal ARA750 ≤ 0.154mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Narayanaswamy 2010	233	278	82	872	0.74 [0.69, 0.79]	0.76 [0.73, 0.78]

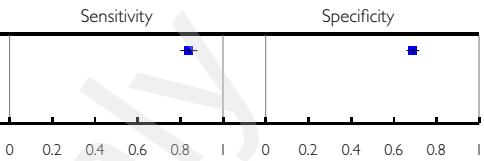


Test 83. AS-OCT Temporal ARA750 ≤ 0.191mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 83 AS-OCT Temporal ARA750 ≤ 0.191mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Narayanaswamy 2010	265	354	50	796	0.84 [0.80, 0.88]	0.69 [0.66, 0.72]

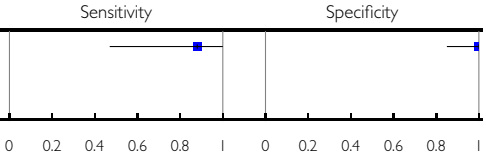


Test 84. AS-OCT TISA500 0.11mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 84 AS-OCT TISA500 0.11mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Radhakrishnan 2005	7	0	1	23	0.88 [0.47, 1.00]	1.00 [0.85, 1.00]

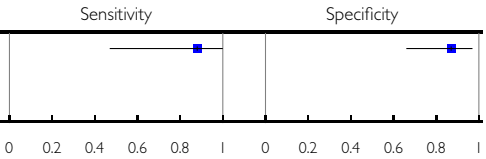


Test 85. AS-OCT TISA750 0.17mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 85 AS-OCT TISA750 0.17mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Radhakrishnan 2005	7	3	1	20	0.88 [0.47, 1.00]	0.87 [0.66, 0.97]

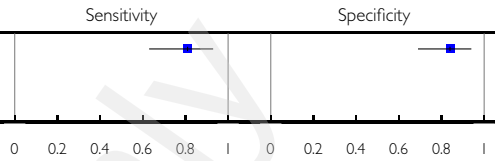


Test 86. AS-OCT Nasal TISA500.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 86 AS-OCT Nasal TISA500

Study	TP	FP	FN	TN	Sensitivity	Specificity
Melese 2016	25	6	6	32	0.81 [0.63, 0.93]	0.84 [0.69, 0.94]

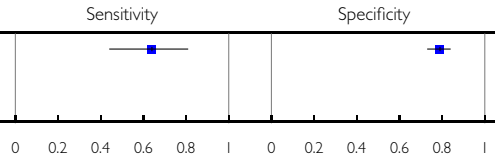


Test 87. AS-OCT Nasal TISA500 ≤0.2mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 87 AS-OCT Nasal TISA500 ≤0.2mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Grewal 2011	18	50	10	187	0.64 [0.44, 0.81]	0.79 [0.73, 0.84]

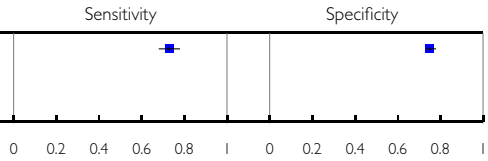


Test 88. AS-OCT Nasal TISA500 ≤ 0.76mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 88 AS-OCT Nasal TISA500 ≤ 0.76mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Narayanaswamy 2010	231	285	84	865	0.73 [0.68, 0.78]	0.75 [0.73, 0.78]

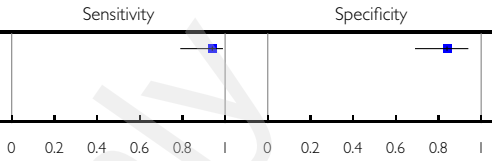


Test 89. AS-OCT Nasal TISA750.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 89 AS-OCT Nasal TISA750

Study	TP	FP	FN	TN	Sensitivity	Specificity
Melese 2016	29	6	2	32	0.94 [0.79, 0.99]	0.84 [0.69, 0.94]

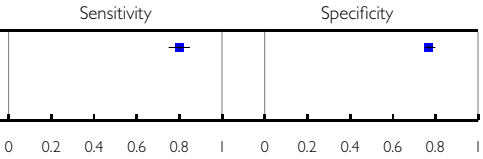


Test 90. AS-OCT Nasal TISA750 $\leq$ 0.134mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 90 AS-OCT Nasal TISA750 $\leq$ 0.134mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity
Narayanaswamy 2010	253	259	62	891	0.80 [0.75, 0.85]	0.77 [0.75, 0.80]

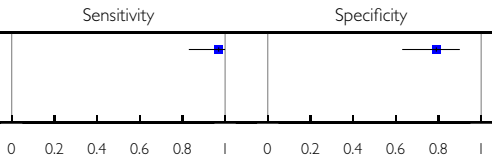


Test 91. AS-OCT Temporal TISA750.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 91 AS-OCT Temporal TISA750

Study	TP	FP	FN	TN	Sensitivity	Specificity
Melese 2016	30	8	1	30	0.97 [0.83, 1.00]	0.79 [0.63, 0.90]

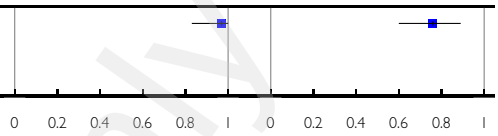


Test 92. AS-OCT Temporal TISA500.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 92 AS-OCT Temporal TISA500

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Melese 2016	30	9	1	29	0.97 [0.83, 1.00]	0.76 [0.60, 0.89]		

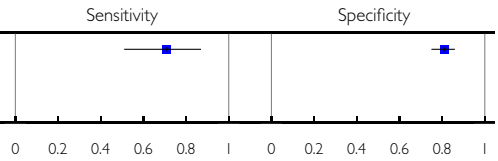


Test 93. AS-OCT Temporal TISA 500 $\leq$ 0.21mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 93 AS-OCT Temporal TISA 500 $\leq$ 0.21mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Grewal 2011	20	45	8	192	0.71 [0.51, 0.87]	0.81 [0.75, 0.86]		

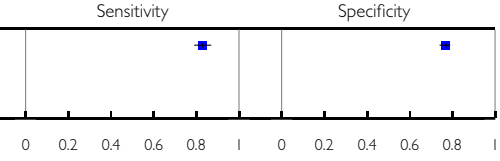


Test 94. AS-OCT Temporal TISA750 $\leq$ 0.151mm².

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 94 AS-OCT Temporal TISA750 $\leq$ 0.151mm²

Study	TP	FP	FN	TN	Sensitivity	Specificity	Sensitivity	Specificity
Narayanaswamy 2010	263	268	52	882	0.83 [0.79, 0.87]	0.77 [0.74, 0.79]		

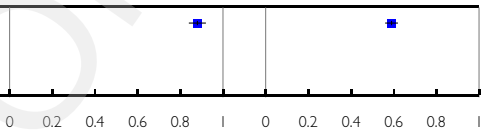


Test 95. AS-OCT Temporal TISA500 $\leq$ 0.103mm^2.

Review: Non-contact methods for the detection of people at risk of primary angle closure glaucoma

Test: 95 AS-OCT Temporal TISA500 $\leq$ 0.103mm^2

Study	TP	FP	FN	TN	Sensitivity	Specificity
Narayanaswamy 2010	278	470	37	680	0.88 [0.84, 0.92]	0.59 [0.56, 0.62]



ADDITIONAL TABLES

Table 1. Guidance for QUADAS 2 assessment of risk of bias

DOMAIN	LOW	HIGH	UNCLEAR
PARTICIPANT SELECTION	Describe methods of participant selection; describe included participants (prior testing, presentation, intended use of index test and setting)		
Was a consecutive or random sample of participants enrolled?	Consecutive sampling or random sampling of people according to inclusion criteria	Non-consecutive cohort of referrals (from primary care) or (in screening setting) sampling based on volunteering or referral	Unclear whether consecutive or random sampling used
Was a case-control design avoided?	No selective recruitment of people with or without narrow angles, or nested case-control designs (systematically and randomly selected from a defined population cohort)	Selection of either cases or controls in a predetermined, non-random fashion; or enrichment of the cases from a selected population	Unclear selection mechanism
Did the study avoid inappropriate exclusions?	Exclusions are detailed and felt to be appropriate (e.g. people with corneal opacities, known ocular malformation or disease causing bulbar derangement)	Inappropriate exclusions are reported (e.g. of people with borderline index test results)	Exclusions are not detailed (pending contact with study authors)

Table 1. Guidance for QUADAS 2 assessment of risk of bias (*Continued*)

Risk of bias: could the selection of participants have introduced bias?	All signalling questions = 'Yes'	Any signalling question = 'No'	Unclear
Concerns regarding applicability: are there concerns that the included participants do not match the review question?	Inclusion of participants without a previous diagnosis of a narrow angle	Inclusion of participants with a previous diagnosis of a narrow angle	Unclear inclusion criteria
INDEX TEST	Describe the index test and how it was conducted and interpreted		
Were the index test results interpreted without knowledge of the results of the reference standard?	Test performed "blinded" or "independently and without knowledge of" reference standard results are sufficient and full details of the blinding procedure are not required; or clear temporal pattern to the order of testing that precludes the need for formal blinding	Reference standard results were available to those who conducted or interpreted the index tests	Unclear whether results are interpreted independently
If a threshold was used, was it prespecified?	The study authors declare that the selected cut-off used to dichotomise data was specified a priori; or a protocol is available with this information	A study is classified at higher risk of bias if the authors define the optimal cut-off post hoc, based on their own study data	No information on preselection of index test cut-off values
Risk of bias: could the conduct or interpretation of the index test have introduced bias?	All signalling questions = 'Yes'	Any signalling question = 'No'	Unclear
Concerns regarding applicability: are there concerns that the index test, its conduct or interpretation differ from the review question?	Tests used and testing procedure clearly reported and tests executed by personnel with sufficient training	Tests used are not validated or study personnel was insufficiently trained	Unclear execution of the tests or unclear study personnel profile, background and training
REFERENCE STANDARD	Describe the reference standard and how it was conducted and interpreted		
Is the reference standard likely to correctly classify the target condition?	Not applicable. Score 'Yes' for all studies		
Were the reference standard results interpreted without knowledge of the results of the index test?	Reference standard performed "blinded" or "independently and without knowledge of" index test results are sufficient and	Index test results were available to those who conducted the reference standard	Unclear whether results were interpreted independently

Table 1. Guidance for QUADAS 2 assessment of risk of bias (*Continued*)

	full details of the blinding procedure are not required; or clear temporal pattern to the order of testing that precludes the need for formal blinding		
Risk of bias: could the reference standard, its conduct or its interpretation have introduced bias?	All signalling questions = 'Yes'	Any signalling question = 'No'	Unclear
Concerns regarding applicability: are there concerns that the target condition as defined by the reference standard does not match the review question?	Not applicable. Score 'Low' for all studies		
FLOW AND TIMING	Describe any participants who did not receive the index test(s) or reference standard, or either, or who were excluded from the 2 x 2 table (refer to study flow diagram); describe the time interval and any interventions between index test(s) and reference standard		
Was there an appropriate interval between index test(s) and reference standard?	No more than three months between index and reference test execution	More than three months between index and reference test execution	Unclear whether test results were executed within three months
Did all participants receive a reference standard?	All participants receiving the index test were verified with the reference standard	Not all participants receiving the index test were verified with the reference standard	Unclear whether all participants receiving the index test were verified with the reference standard
Did all participants receive the same reference standard?	Not applicable. Score 'Yes' for all studies		
Were all participants included in the analysis?	The number of participants included in the study match the number in analysis	The number of participants included in the study does not match the number in analysis	Insufficient information on whether the number of participants included in the study matches the number in analysis
Risk of bias: could the participants' flow through the study have introduced bias?	All signalling questions = 'Yes'	Any signalling question = 'No'	Unclear

APPENDICES

Appendix 1. The Cochrane Library search strategy

#1 MeSH descriptor: [Glaucoma, Angle-Closure] this term only
#2 angle* near/3 (occlud* or narrow* or width or close* or closure)
#3 glaucoma* near/3 (occlud* or narrow* or width or close* or closure)
#4 PAC or PACS or PACG or ACG
#5 #1 or #2 or #3 or #4
#6 MeSH descriptor: [Anterior Chamber] this term only
#7 MeSH descriptor: [Anterior Eye Segment] this term only
#8 anterior near/2 (chamber or segment)
#9 ACD or ACA
#10 #6 or #7 or #8 or #9
#11 MeSH descriptor: [Glaucoma] explode all trees
#12 #10 and #11
#13 #5 or #12
#14 MeSH descriptor: [Diagnostic Techniques, Ophthalmological] explode all trees
#15 flashlight* or torch
#16 MeSH descriptor: [Slit Lamp] this term only
#17 MeSH descriptor: [Slit Lamp Microscopy] this term only
#18 slit near/2 (lamp or beam)
#19 biomicroscope
#20 anterior chamber depth*
#21 Anterior chamber volume
#22 lens volume
#23 ACD or LACD or SPAC or ACV
#24 Herick
#25 Scheimpflug or Pentacam or Sirius or Galilei
#26 MeSH descriptor: [Tomography, Optical Coherence] explode all trees
#27 optical coherence tomograph*
#28 AS-OCT or Visanti
#29 anterior segment imag*
#30 angle recess area
#31 angle opening distance
#32 (angle or area*) near/2 trabec* near/2 iris
#33 AOD or TISA
#34 #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #33
#35 #13 and #34

Appendix 2. MEDLINE Ovid search strategy

1. Glaucoma, Angle-Closure/
2. (angle$ adj3 (occlud$ or narrow$ or width or close$ or closure)).tw.
3. (glaucoma$ adj3 (occlud$ or narrow$ or width or close$ or closure)).tw.
4. (PAC or PACS or PACG or ACG).tw.
5. or/1-4
6. Anterior Chamber/
7. Anterior Eye Segment/
8. (anterior adj2 (chamber or segment)).tw.
9. (ACD or ACA).tw.
10. or/6-9
11. exp Glaucoma/

12. 10 and 11
13. 5 or 12
14. Diagnostic Techniques, Ophthalmological/
15. (flashlight$ or torch).tw.
16. Slit Lamp/
17. Slit Lamp Microscopy/
18. (slit adj2 (lamp or beam)).tw.
19. biomicroscope.tw.
20. anterior chamber depth$.tw.
21. (ACD or LACD or SPAC).tw.
22. Herick.tw.
23. (Scheimpflug or Pentacam or Sirius or Galilei).tw.
24. Tomography, Optical Coherence/
25. optical$ coherence tomograph$.tw.
26. (AS-OCT or Visanti).tw.
27. anterior segment imag$.tw.
28. angle recess area.tw.
29. angle opening distance.tw.
30. ((angle or area$) adj2 trabec$ adj2 iris).tw.
31. (AOD or TISA).tw.
32. or/14-31
33. 13 and 32
34. exp case report/
35. (case adj1 (study or report$)).tw.
36. 34 or 35
37. 33 not 36

Appendix 3. Embase Ovid search strategy

1. closed angle glaucoma/ or glaucomatous optic neuropathy/ or neovascular glaucoma/ or secondary glaucoma/
2. (angle$ adj3 (occlud$ or narrow$ or width or close$ or closure)).tw.
3. (glaucoma$ adj3 (occlud$ or narrow$ or width or close$ or closure)).tw.
4. (PAC or PACS or PACG or ACG).tw.
5. or/1-4
6. anterior eye chamber/
7. anterior eye segment/
8. (anterior adj2 (chamber or segment)).tw.
9. (ACD or ACA).tw.
10. or/6-9
11. exp glaucoma/
12. 10 and 11
13. 5 or 12
14. (flashlight or torch).tw.
15. slit lamp/
16. (slit adj2 (lamp or beam)).tw.
17. biomicroscope.tw.
18. anterior eye chamber angle/
19. anterior eye chamber depth/
20. anterior chamber depth$.tw.
21. Anterior chamber volume.tw.
22. lens volume.tw.
23. (ACD or LACD or SPAC or ACV).tw.

24. Herick.tw.
25. ophthalmic camera/
26. (Scheimpflug or Pentacam or Sirius or Galilei).tw.
27. optical coherence tomography/
28. optical$ coherence tomograph$.tw.
29. (AS-OCT or Visanti).tw.
30. anterior segment imag$.tw.
31. angle recess area.tw.
32. angle opening distance.tw.
33. ((angle or area$) adj2 trabec$ adj2 iris).tw.
34. (AOD or TISA).tw.
35. or/14-34
36. 13 and 35

Appendix 4. BIOSIS search strategy

#29 #28 AND #27
#28 TS= (human or humans)
#27 #26 AND #10
#26 #25 OR #24 OR #23 OR #22 OR #21 OR #20 OR #19 OR #18 OR #17 OR #16 OR #15 OR #14 OR #13 OR #12 OR #11
#25 TS=(AOD or TISA)
#24 TS= ((angle or area*) NEAR/2 trabec* NEAR/2 iris)
#23 TS= (angle opening distance)
#22 TS= (angle recess area)
#21 TS= (anterior segment imag*)
#20 TS = (AS-OCT or Visanti)
#19 TS= (optical* coherence tomograph*)
#18 TS= (Herick or Scheimpflug or Pentacam or Sirius or Galilei)
#17 TS= (ACD or LACD or SPAC or ACV)
#16 TS= (lens volume)
#15 TS= (Anterior chamber volume)
#14 TS= (anterior chamber depth)
#13 TS=biomicroscope
#12 TS=(slit NEAR/2 (lamp or beam))
#11 TS= (flashlight* or torch)
#10 #9 OR #4
#9 #8 AND #7
#8 TS= Glaucoma
#7 #6 OR #5
#6 TS= (ACD or ACA)
#5 TS= (anterior NEAR/2 (chamber or segment))
#4 #3 OR #2 OR #1
#3 TS= (PAC or PACS or PACG or ACG)
#2 TS= (glaucoma* NEAR/3 (occlud* or narrow* or width or close* or closure))
#1 TS = (angle* NEAR/3 (occlud* or narrow* or width or close* or closure))

Appendix 5. OpenGrey search strategy

(angle closure glaucoma OR PAC OR PACS OR PACG OR ACG) AND (flashlight OR torch OR Slit Lamp OR biomicroscope OR anterior chamber depth OR ACD OR LACD OR SPAC OR Scheimpflug OR Pentacam OR Optical Coherence Tomography OR Visanti)

Appendix 6. ARIF search strategy

(angle closure glaucoma OR PAC OR PACS OR PACG OR ACG) (All indexed fields) AND (flashlight OR torch OR Slit Lamp OR biomicroscope OR anterior chamber depth OR ACD OR LACD OR SPAC OR Scheimpflug OR Pentacam OR Optical Coherence Tomography OR Visanti) (All indexed fields)

Appendix 7. ISRCTN search strategy

(angle closure glaucoma OR PAC OR PACS OR PACG OR ACG) AND (flashlight OR torch OR Slit Lamp OR biomicroscope OR anterior chamber depth OR ACD OR LACD OR SPAC OR Scheimpflug OR Pentacam OR Optical Coherence Tomography OR Visanti)

Appendix 8. ClinicalTrials.gov search strategy

(angle closure glaucoma OR PAC OR PACS OR PACG OR ACG) AND (flashlight OR torch OR Slit Lamp OR biomicroscope OR anterior chamber depth OR ACD OR LACD OR SPAC OR Scheimpflug OR Pentacam OR Optical Coherence Tomography OR Visanti)

Appendix 9. ICTRP search strategy

angle closure glaucoma OR PAC OR PACS OR PACG OR ACG = Condition AND flashlight OR torch OR Slit Lamp OR biomicroscope OR anterior chamber depth OR ACD OR LACD OR SPAC OR Scheimpflug OR Pentacam OR Optical Coherence Tomography OR Visanti = Intervention

Appendix 10. List of abbreviations

PACS	Primary angle closure suspect
PAC	Primary angle closure
PACG	Primary angle closure glaucoma
IOP	Intraocular pressure
ITC	Irido-trabecular contact
PAS	Peripheral anterior synechiae
ACA	Anterior chamber angle
ACD	Anterior chamber depth
LACD	Limbal anterior chamber depth
ACV	Anterior chamber volume
SPAC	Scanning peripheral anterior chamber analysis
AS-OCT	Anterior segment ocular coherence tomography
TISA	Trabeculo-iris space area
ARA	Angle recess area
AOD	Angle opening distance

CONTRIBUTIONS OF AUTHORS

Conceiving the review: JL

Drafting of protocol: AJ, JL, IC, GV, EL

DECLARATIONS OF INTEREST

None known

SOURCES OF SUPPORT

Internal sources

- No sources of support supplied

External sources

- College of Optometrists, UK.
- Anish Jindal acknowledges support from a PhD studentship from the College of Optometrists

National Institute for Health Research, UK.

- Richard Wormald, Co-ordinating Editor for Cochrane Eyes and Vision (CEV) acknowledges financial support for his CEV research sessions from the Department of Health through the award made by the National Institute for Health Research to Moorfields Eye Hospital NHS Foundation Trust and UCL Institute of Ophthalmology for a Specialist Biomedical Research Centre for Ophthalmology.
- This protocol was supported by the National Institute for Health Research, via Cochrane Infrastructure funding to the CEV UK editorial base.

The views and opinions expressed therein are those of the authors and do not necessarily reflect those of the Systematic Reviews Programme, NIHR, NHS or the Department of Health.