

# The Royal College of Ophthalmologists

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FROM THE EXAMINATIONS DEPARTMENT



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## Final Report November 2011 Refraction Certificate Examination

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## **Introduction**

The sixth Refraction Certificate examination in the format was held in Optegra Day Hospital, Aston University, Birmingham on 28<sup>th</sup> and 29th November 2011. 69 candidates presented themselves for the examination. The examination consisted of an eight station OSCE covering a range of skills required to assess visual acuity, refractive error and the prescription of spectacles.

## **Examination blueprint**

The Refraction Certificate (RCert) is designed to assess the following learning outcomes from the Royal College of Ophthalmologists curriculum for ophthalmic specialist training (OST):

CA2	Vision
CA7	Motility
PM1	Management plan
PM14	Spectacles
PS2	Refraction
PS21	Hand hygiene
C1	Rapport
C2	Communication
C12	Records
BCS6	Optics
BCS14	Instrument technology
AER16	Time management

## **Examination Structure**

Eight OSCE stations are selected from a possible 16. Four stations are compulsory (they will appear in every examination). Four stations are selected from the remaining twelve.

### **Compulsory stations:**

1. Cycloplegic Retinoscopy 1
2. Non Cycloplegic Retinoscopy 1
3. Subjective Refraction Sphere
4. Subjective Refraction Cylinder

### **Remaining stations**

5. Binocular Balance
6. Cycloplegic Retinoscopy 2
7. Focimetry
8. Lens Neutralisation
9. Muscle Balance with Maddox Rod
10. Muscle Balance with Prism Cover Test
11. Near Addition
12. Non Cycloplegic Retinoscopy 2
13. Refraction of a Model Eye
14. Trial Frame Fitting and Interpupillary Distance (IPD) Measurement
15. Visual Acuity and Refraction Estimation
16. Visual Acuity Testing of a Child

The stations used in the November 2011 examination were:

1. Cycloplegic Retinoscopy 1
2. Muscle balance with Maddox Rod
3. Non-cycloplegic Retinoscopy 1
4. Focimetry
5. Subjective Refraction Cylinder
6. Visual Acuity and Refraction Estimation
7. Subjective Refraction Sphere
8. Near Addition

### **Standard setting**

Candidates must be able to accurately assess visual acuity, measure refractive error and recommend an appropriate spectacle correction to pass the Refraction Certificate. The pass mark is identified using the borderline candidate method. In addition the pass mark using the Hofstee method is calculated as a comparison, but not used to decide identify the successful candidates.

### **Borderline candidate method (BCM)**

Examiners marked the station they were supervising according to the marking guidance provided. In addition they were asked to rate the candidates overall performance as a pass, a fail or borderline. The median mark allocated to the borderline candidates then becomes the pass mark for that station. The sum of the borderline marks for each station is the examination pass mark.

### **Hofstee method (see appendix 3 for details)**

In advance of the examination, members of the College's Examinations Committee were asked to nominate the values for the following:

1. The maximum credible pass mark for the examination
2. The maximum credible pass rate for the examination
3. The minimum credible pass mark for the examination
4. The minimum credible pass rate for the examination

The cumulative fail rate as a function of the pass mark and the co-ordinates derived from the four values above were plotted on a graph. The point where a line joining the two co-ordinates intersects the cumulative function curve is used to identify the pass mark. The Hofstee pass mark is used to compare the difficulty of successive examinations)

### Results (Table 1)

Maximum possible mark	100
Mean candidate mark	69
Median candidate mark	69
Standard deviation	12.8
Highest candidate mark	93
Lowest candidate mark	38
Range of marks	55
Reliability	0.6
Standard error of measurement (SEM)	8
BCM pass mark	57
Hofstee pass mark	68
Pass mark used (BCM + 1 SEM)	65
Pass rate	49/69 (71%)

### Distribution of marks (Table 2)

Score	Distribution	Total
36-40	//	2
41-45	//	2
46-50	//	2
51-55	////	4
56-60	////	4
61-65	//// / /	11
66-70	//// //// //	12
71-75	//// //// ////	14
76-80	////	5
81-85	////	4
86-90	//// /	6
91-95	///	3
Total		69

### Statistics for each station (Table 3)

	Station							
	1	2	3	4	5	6	7	8
	Cyclo ret	Maddox	Non-cyclo ret	Focimetry	Cylinder	VA	Sphere	Near add
Max mark	15	15	15	10	15	5	15	10
Mean	10.3	10.9	7.7	5.7	11.0	4.7	11.8	7.0
Mean%	68.7	72.8	51.2	57.2	73.1	93.3	78.4	70.3
Median	11.0	12.0	7.0	6.0	12.0	5.0	13.0	7.0
Med%	73.3	80.0	46.7	60.0	80.0	100.0	86.7	70.0
SD	4.2	3.6	4.7	3.2	3.5	0.7	3.0	2.0
Max	15	15	15	10	15	5	15	10
Min	0	0	1	1	1	1	2	2
Range	15	15	14	9	14	4	13	8

## Correlation between stations (Table 4)

		2	3	4	5	6	7	8
		Maddox	Non-cyclo ret	Focimetry	Cylinder refinement	VA	Spherical refinement	Near add
1	Cyclo ret	0.10	0.19	0.06	0.02	-0.19	0.08	-0.08
2	Maddox		0.15	0.34	0.33	-0.02	0.12	0.27
3	Non-cyclo ret			0.07	0.20	0.06	0.02	0.33
4	Focimetry				0.28	0.18	0.03	0.12
5	Cylinder					0.28	0.26	0.20
6	VA						0.04	0.33
7	Sphere							-0.05

### Comment

Cylinder and spherical refinement of a retinoscopy result are reasonably well correlated, which is to be expected if candidates are completing refractions as part of their preparation for the examination. The Maddox rod assessment of muscle balance, correlates well with focimetry, cylinder refinement and near add.

Cycloplegic retinoscopy has poor correlation with all the stations.

### Item discrimination and facility

33% item discrimination has a value between -1.00 and +1.00. If the candidates who score well in the examination overall score well in the station, the item discrimination index will be close to +1.00. If the candidates who score poorly in the examination overall score well in the station, the item discrimination index will be close to -1.00. Ideally the station item discrimination value should be greater than 0.400. The facility of each station estimates how easy the candidates found the task to complete.

### Utility of each question (Table 5)

Pass or fail on marks for each station

	Station	33% item discrimination	Item facility
1.	Cyclo retinoscopy	0.391	0.687
2.	Maddox rod	0.435	0.728
3.	Non-cyclo retinoscopy	0.478	0.512
4.	Focimetry	0.391	0.572
5.	Cylinder refinement	0.478	0.731
6.	VA	0.043	0.933
7.	Sphere refinement	0.217	0.784
8.	Near add	0.348	0.703

## Standard setting and global judgments for each station (table 6)

	Station (number of candidates)							
	1	2	3	4	5	6	7	8
	Cyclo ret	Maddox	Non-cyclo ret	Focimetry	Cylinder	VA	Sphere	Near add
Pass	35	43	18	31	45	61	51	40
Borderline	15	19	19	9	17	5	11	21
Fail	19	7	32	29	7	3	7	8
% Pass	51	62	26	45	65	88	74	58
BCM mark*	9	8	9	5	8	3	9	6

\*BCM mark = median mark for borderline candidates for each station.

## Breakdown of results by training (Table 7)

	Failed	Passed	Total
In OST	12	36	48
Not in OST	8	13	21
Total	20	49	69

These differences are not statistically significant ( $p = 0.4$ )

## Breakdown of results by deanery (Table 8)

Deanery	Failed	Passed	Total
East Midlands (north)	0	2	2
East of England	3	3	6
East of Scotland	0	1	1
London	4	10	14
Mersey	0	1	1
North West	0	2	2
Northern	0	2	2
Northern Ireland	0	1	1
Oxford	0	1	1
Peninsula	0	1	1
South Yorks South Humber	1	0	1
Severn	1	0	1
Wales	0	2	2
West Scotland	1	1	2
Wessex	0	2	2
West Midlands	2	4	6
Yorkshire	0	3	3
Total	12	36	48

## Breakdown of results by stage of training (Table 9)

Stage (includes FTSTA)	Failed	Passed	Total
ST1	3	3	6
ST2	4	8	12
ST3	5	23	28
ST4	0	1	1
Total	12	35	47

### Breakdown of results by gender (Table 10)

	Failed	Passed	Total
Female	10	18	28
Male	10	31	41
Total	20	49	69

These differences are not statistically significant ( $p = 0.42$ )

### Breakdown of results by country of qualification (Table 11)

	Failed	Passed	Total
UK	7	28	35
Outside UK	13	21	34
Total	20	49	69

These differences are not statistically significant ( $p = 0.12$ )

### Breakdown of results by stated ethnicity (Table 12)

	Failed	Passed	Total
Asian/black	12	14	26
Other	4	18	22
White	1	15	16
Unknown	3	2	5
Total	20	49	69

These differences are statistically significant for white/non white candidates ( $p = 0.05$ )

### Breakdown of results by stated ethnicity for candidates in OST (Table 13)

	Failed	Passed	Total
White	1	13	14
Unknown	11	23	34
	12	36	48

These differences are not statistically significant for white/non white candidates ( $p = 0.14$ )

### Breakdown of results by number of previous attempts (Table 14)

Attempts	Failed	Passed	Total
1 (First)	15	32	47
2	5	12	17
3	0	3	3
4	0	1	1
5	0	0	0
6	0	1	1
Any resit	5	17	22

### Comparison to previous examinations (Table 15)

	March 2010	July 2010	Nov 2011	April 2011	July 2011	Nov 2011
Candidates	43	47	53	57	41	69
Pass mark	69	75	74	71	67	65
Pass rate	47%	53%	42%	35%	66%	71%
Pass rate in OST	58%	60%	44%	47%	72%	75%
% Candidates in OST	67%	70%	68%	63%	71%	70%
Reliability	0.58	0.6	0.6	0.6	0.42	0.6
SEM	9	8	7	6	6	8
Hofstee pass mark	68	72	71	67	71	68

### Performance of candidate by deanery for all examinations to date, where deanery is known (table 16)

Deanery	Total candidates	Total passes	Pass rate
Wales	4	4	100
East of Scotland	3	3	100
Oxford	1	1	100
Mersey	9	7	78
East Midlands	11	8	73
London	44	31	70
SE Scotland	6	4	67
Northern Ireland	3	2	67
Northern	10	6	60
Yorkshire	20	11	55
East of England	11	6	55
West Midlands	19	10	53
West Scotland	4	2	50
Wessex	4	2	50
Severn	2	1	50
North West	15	7	47
Peninsula	10	4	40
South Yorks South Humber	4	1	25
Total	180	110	61



## Evaluation

Detailed candidate evaluation can be found in Appendix 1. Candidates also provided advice for future candidates, which is also detailed in Appendix 1.

The candidates were happy that the examiners were courteous and that the patients were appropriate for the examination. Both candidates and examiners commented on the organisation of the examination and the instructions provided.

The muscle balance station appears to have caused candidates more difficulty when compared to the rest, although this is not reflected in the facility or average mark obtained by the candidates.

Candidates expressed concerns about the time available for some of the stations.

The OSCE structure of the refraction examination is still criticised by some candidates although many feel that it is a valid way of assessing the skills required for refraction and candidates still appear to perform refractions as part of their preparation:

20 candidates declared an estimate of the number of refractions they had completed.

Number of refractions	Distribution	Number
>100	//// //	7
81-100		0
61-80	///	3
41-60	//// /	6
21-40	///	3
0-20	/	1

The pass rate for the examination is good at around 70%, for both candidates in OST and those outside UK training programmes. The pass mark for this examination was the lowest since the examination was introduced (65%), but this is in broad agreement with the Hofstee pass mark (68%), which reflects the standard expected by the examiners.

The distribution of marks obtained by candidates is less bimodal, which suggests that candidates are less likely to sit the examination before they have made appropriate preparation.

The non-cycloplegic retinoscopy station proved to be the most challenging for the candidates (average mark 47%, facility 0.512), but it is the most discriminating station (33% item discrimination 0.478). This should be taken into consideration if more stations are to be included in further presentations of the examination.

The reliability of the examination is still too low at 0.6, and this must be addressed so that GMC requirements can be met.

There is a statistically significant difference between the success rates of white and non-white candidates, however this difference is not significant for whites and non-white candidates in OST.

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**Education Adviser**

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## Appendix 1

### Candidate OSCE Stations Feedback –

Team 1 (9 Forms Received)

Team 2 (12 Forms Received)

### Were you treated in a courteous manner by the examiners in this station?

Team 1			Team 2			Overall		
Yes	No	DNA	Yes	No	DNA	Yes	No	DNA
100%	0	0	100%	0	0	100%	0	0

#### **Team 1 comments:**

- I thoroughly felt the positivity of the environment and examiners
- My retinoscope switched off during the cycloplegic refraction station. The examiner rushes to get me a new one and negotiated some extra time to complete the station
- all examiners were very nice and courteous
- The examiners were all polite and helpful

#### **Team 2 comments:**

- Overall I had been treated in a courteous manner by the examiners. However, in the Maddox Rod station the examiner stressed me out about the limited time I have got. This affected my performance in this station
- Yes all the examiners were very professional
- An excellent atmosphere was created allowing me to feel more at ease
- All the examiners were very polite and helpful. They were very patient and I have no complaints
- All of the examiners were very courteous
- Very helpful examiners
- They were polite

### Were the patients you were asked to examine appropriate for the station?

Team 1			Team 2			Overall		
Yes	No	DNA	Yes	No	DNA	Yes	No	DNA
100%	0	0	92%	8%	0	95%	5%	0

#### **Team 1 comments:**

- patients were generally well chosen
- The patients were all appropriate to the stations they were examined in

#### **Team 2 comments:**

- All the patients were very patient and compliant with instructions and questions. Patient for Maddox rod only had 2 dioptres of exophoria so not much to test
- Most of the patients were appropriate, only one or two seemed tired and weary of being examined and it showed in their answers and demeanour throughout my examination
- The cyclo retinoscopy patient was unable to keep eye open fully throughout examination despite prompting

## OSCE Overall Feedback

### Was the OSCE well organised?

Team 1			Team 2			Overall		
Yes	No	DNA	Yes	No	DNA	Yes	No	DNA
78%	11%	11%	67%	16.5%	16.5%	71%	14.5%	14.5%

#### **Team 1 comments:**

- It was slightly running late but it went very smoothly
- The instruments should be checked and charged before each group of examinees is called in
- In general yes
- Trial lens box was with the full aperture lenses in all the four rooms. It was very difficult to visualize the sign, power and the cylinder axis. [ I am presbyopic and even with my reader struggled to see the markings
- The layout, timing, and instructions were all very organized

#### **Team 2 comments:**

- Most of the stations were well organized. However, the Maddox Rod/ Cycloplegic refraction station was not organized. The lens box was not organized (as the previous candidate stayed a longer time!! And I was kept waiting outside the room) and the examiner asked me to fit the appropriate lenses in the trial frame. Therefore, I did not have enough time to familiarize myself with the equipments in the examination room. In addition, the provided retinoscope was loose in this station and I could not stop to adjust it as I know it will affect my timing
- No, not at all
- Yes I felt they were challenging but appropriate
- The information for candidates gave exact instructions on how the exam would be conducted, how much familiarisation time would be allowed, how the timing would then be conducted and also exactly what information would be provided. The exam was not run to these exact standards. The information provided was variable and sometimes only communicated verbally (whereas refractions are often easier to understand when written down). The amount of familiarization time varied and this meant that differing stations within the cycle ran at considerably different rates, which led to some minor confusion. I do not want to be too critical, but if something specific is expected by a candidate and that is not delivered then it could affect their performance. Although the rooms were generally well equipped there were some technical difficulties. For example, in one station the examiner could not present me with the fixation target of preference (a white light/spot) on the projector. I was not allowed to try to change this myself either. Also I did not think the light source (pen torch) for the Maddox Rod station was consistent enough and led to problems during this test.
- Plenty of time to move between stations. Given adequate warning of finishing times. Maddox rod station – no distance fixation target/spot – examiner had to hold up torch. Trial frames did not fit patient, patient had to hold trial lenses on with finger. Patient dropped trial frame in middle of examination and lenses fell out.
- Except for the station with the Maddox Rod , thought was too much to do in only 5 minute period with no prism bars and to measure the deviation
- It ran well – but did start late
- There was a delay with the starting
- The examination started 45 minutes late. Generally it wasn't clear when the preparation minute expired and the 5mins examination time began. Specifically in the room hosting the subjective sphere / near vision stations it was so unclear I was under the impression I was still preparing and had to ask whether the second

station had begun or not. Rooms ended up staggered and had different start times with an additional 3 to 4 minute wait outside of non-cyclo ret / focimetry stations. Each examiner seemed to be running each room in a different way. In the Maddox rod / cyclo ret station I was given the wrong answer sheet to fill in. In this same room the stations were conducted in reverse order to the instructions outside the room. (ie. The instructions suggested it would be cyclo ret followed by Maddox. Upon entering the examiner requested Maddox station first). I would suggest a generic loud buzzer to indicate simultaneously to all rooms start and finish times. The examiners may also need more time to finish mark sheets / setup the rooms in between candidates.

- But it would have been better if we did not have to read the instructions for 2 OSCE stations at once prior to commencing each station. Under pressure sometimes, its difficult to remember the requirements for the second station having just completed the first.
- In ret station lenses were not in correct rack area, ie plus lenses in minus area. Very confusing, previous candidate had left them this way, but not checked by examiner

### Were you given clear instructions about the OSCE?

Team 1			Team 2			Overall		
Yes	No	DNA	Yes	No	DNA	Yes	No	DNA
67%	33%	0	92%	8%	0	81%	19%	0

#### **Team 1 comments:**

- A little bit confusing instructions at some stations
- for the parts of visual acuity testing, Maddox rod muscle balance, and also binocular balancing, the instructions given in the guidelines are lacking. The descriptions given as to the steps were not clear enough, especially visual acuity testing and also binocular balancing
- Yes for the most part, although the examiner in the subjective cylinder station didn't allow me to use my own trial frame. According to the instructions to candidates I should have been allowed to do so. I felt it best not to argue with the examiner, but they should be aware of the rules of the exam

#### **Team 2 comments:**

- Yes. However, the College instructions mentioned that it might not be easy to do cover/uncover & Alternate Cover Test with a fitted trial frame and in the OSCE we were asked to do this test with a fitted trial frame. Besides, the instructions were not clear in this station whether to do the test for near or distance
- it was very haphazard. We didn't knew where we were about to proceed next
- Maddox Rod station – instructions to candidates provided on RCOphth website state that you will be given the results of a cover test, however, I was instructed to perform a cover test in the first instance on the patient and then proceed to Maddox Rod. Near addition station – instructions for last part were unclear as to whether I just had to write down explanation of prescription and advice or whether I had to actually say it to the patient
- Only station with Maddox Rod was not very clear when compared to guidelines from the College
- It was clear what I was being asked to do but I found conveying the information in the time given very difficult. I have practiced extensively each station (courses etc) and found that although I could do the stations I wasn't sure what to write in each space on the paper. This would be fine if it weren't for the time pressure. I'd suggest putting example station question papers (with or without the mark scheme) on the web so we can familiarize – standing outside trying to forget the mistakes of

the last station is not the time to be trying to figure out where to write (no prism required).

- The pre-exam material was very clear about the exam format
- On the whole yes. The Maddox rod station instructions were a little vague

### Did you feel that the OSCE was a fair assessment of your knowledge?

Team 1			Team 2			Overall		
Yes	No	DNA	Yes	No	DNA	Yes	No	DNA
67%	22%	11%	50%	42%	8%	57%	33%	10%

#### **Team 1 comments:**

- It might be more appropriate to do a whole assessment on one or two patients and see we are able to come up with appropriate prescription
- No because during my first station the retinoscope stopped working during the crucial part of the station and distracted me to that extent that I forgot to take my working distance off my final result
- I felt the assessment was very good
- I felt that on the whole the exam was systematic and fair
- The focimeter on offer was a slightly unusual variant with axis marking on a wheel at the bottom which I have not encountered before and was not able to figure out how to turn it

#### **Team 2 comments:**

- Overall yes, but some stations need longer time than others as Maddox Rod, Prism cover test to get accurate results and transfer answers onto the answer sheet
- This was total waste of time and money
- I feel that in real life no one assesses a patient in five minutes and that in practice we never assess only one aspect of a patient's refraction. I feel that this exam however can clearly differentiate between candidates who have worked hard and completed enough refractions and those who have not
- The content was exactly as expected and was fair
- Personally I was flustered by the unfamiliarity of the paper and the lenses – this then led to very silly errors which is frustrating. Example mark sheets and standard lenses would solve this – I think the 1<sup>st</sup> time pass rate would rise. Or time to read all the papers somewhere sat down and calm. The lenses were difficult to identify – I am surprised a set of 6 or so haven't been purchased and used for each exam. I have not seen lenses similar on my rotation and identifying a cyl or even the axis of the cyl was very difficult.
- It was a fair assessment but my opinion regarding the 5 minutes for each station is not fair. Because sometimes there can be a tricky patient or stressful candidate so valuable time can be lost... My suggestion would be to refract two or maybe three patients and doing the whole procedure just like it is in the real life... ...(VA estimation, Non-Cyclo/Cyclo Retinoscopy, Subjective refraction Sphere/Cyl, Binocular balance, Near Add, prescribe glasses, give advice, etc....)
- Being unaware of when the second station started in the subjective sphere / near vision room was a disadvantage. Being still under the impression I was using up my preparation time I presumably looked like I was dithering with lenses and somewhat clueless at the beginning of the examination time. Once I'd asked the examiner whether I'd started or not and established that I was actually well into my examination time resulted in a rushed patient assessment with omissions such as forgetting to switch on reading lights, wash hands etc. Having patients scattered around outside the OSCE rooms in their glasses enabled a sneak guesstimate of their prescription while waiting to go into adjacent stations.

- The time allocated is too short to properly assess the skills
- I thought the exam was fair but I found the time available for each station to be too short. Perhaps I need more practice to get faster at the stations, particularly focimetry and noncyclo ret.
- Time is too limited when patient compliance is required

### **Exam Preparation Feedback**

#### **Who helped you to develop competence in refraction?**

Team 1		Team 2		Overall	
Optometrist	7	Optometrist	10	Optometrist	17
Consult' Ophth'	4	Consult' Ophth'	3	Consult' Ophth'	7
Fellow Trainee	4	Fellow Trainee	6	Fellow Trainee	10
Self-taught	5	Self-taught	9	Self-taught	14

#### **Other:**

- Orthoptist
- By optometrists, ophthalmologists as well as self-taught during and after my ophthalmology residency training
- A doctor who does refraction in the eye clinic helped me. My consultant ask me to do cycloplegic refraction in the clinic [one clinic]
- Eastbourne Refraction course which was excellent
- Dundee Refraction Certificate Success Course
- orthoptists at Hospital
- Courses - (London refraction)
- WOPEC course
- Cardiff – WOPEC Refraction Course

#### **Approximately how many complete refractions (retinoscopy + subjective modification) did you carry out in your preparation for the examination?**

##### **Team 1 comments:**

- 120
- 3 a day
- 50
- 40
- About 100 -150 including practice on model eyes, focimeter, and lens neutralization
- Over 200 during and after my ophthalmology training
- Retinoscopy [cycloplegic - >50, Non cycloplegic – 30], Subjective modification – 25
- Didn't count, although it was probably above 50
- 50
- 30

##### **Team 2 comments:**

- 60
- More than 500 cases
- 75
- 80 – 100 (difficult to be certain)
- Roughly 20 full refractions from start to finish – mostly practiced individual stations
- About 55
- At least 50+

- About 40-50 completed refractions
- 150 – 170
- Around 200 Complete refractions
- 30

**Any other advice that you would like to share with future candidates.**

**Team 1 comments:**

- In each station take your time and do the requested task correctly and think about the findings then start writing your final results down on paper. Also a piece of cloth to clean the trial lenses would be a good idea
- Prepare in advance. Useful to meet with other candidates sitting the exam. Refract on a wide range of prescriptions. Also useful to attend paediatric clinics for cyclopegic refraction
- Concentrate on doing more cyclopegic retinoscopy and also get used to different types of focimeters used
- No need to struggle if you take the familiar retinoscope to the examination
- It would be more comfortable if the trial lens set has clear markings than the silver rim lenses. It would be better if the candidate was already informed to bring their own retinoscope. As there are many focimeter types, even an experienced person needs time to find the parts. [power switch, axis wheel]. It will be more easier if the examiner helps to show the important parts. [ This is my personal opinion as I struggled ]
- Retinoscopy forms a major part of the exam and it is a difficult task to perform accurately and quickly so it demands a lot of practice. I would suggest obtaining a retinoscope, model retinoscopy eye and set of trial lenses and practicing with the aid of the following book from beginning to end: The Retinoscopy Book: An Introductory Manual for Eye Care Professionals by John M. Corboy. This is available online for free on the ORBIS website ([http://telemedicine.orbis.org/bins/content\\_page.asp?cid=1-9436](http://telemedicine.orbis.org/bins/content_page.asp?cid=1-9436)). Once this is mastered it is important to practice on a large number of patients/volunteers both with and without cycloplegia. Timing is very tight so for every station it is important to practice the task to be sure it can be completed in well under 5 minutes including writing and double-checking the result

**Team 2 comments:**

- Prepare well on advance
- Please come beforehand and get acquainted with the system and instruments so that you can perform in the limited time you have especially overseas candidates
- Refract as many patients as possible and practice makes perfect!
- Read the information pack early – what is expected is somewhat different to what optometrists actually do in every day practice. Go on the Eastbourne Course organized by Mr Wearne
- More useful practicing individual stations under exam conditions rather than practicing full refractions to pass the exam. I would recommend attending a revision course to learn the basics of refraction prior to revising for the exam
- Practice a lot and don't be nervous or too intimidated. It leaves space for too many errors. Be confident as well
- Read the paper very thoroughly before the station begins
- 1. Go to courses recommended by RCO
- 2. Do as many refractions as possible and if lucky enough to be supervised by consultant or optometrist
- 3. Orthoptist for ocular motility
- 4. Make sure to have enough time just for the refraction practice
- Practice, practice and Practice (ideally under supervision)

- Having read the feedback, I now realise that the results expected need to be very precise to the 0.25D. So I guess the advice would be practice, practice, practice as much Ret and focimetry and lens neutralization as possible to get it right on the day. I know it can be easier said than done when working full time with other commitments, but it's important to make the time to practice Retinoscopy and the other stations.
- Check all lenses are in correct positions following previous candidate, before starting the station

### **Any other comments you have about the Refraction Certificate Exam.**

#### **Team 1 comments:**

- I was unfortunate to get a focimeter machine that I have never operated before. Furthermore, the dials were hard to see and the illuminations were rather poor. There was no time given at all to familiarize myself with this machine. I had practiced extensively on an INAMI focimeter and have become extremely confident with it prior to the exam. However, the Topcon type of focimeter, which I later found is the hybrid type cannot be found in the setting I practice in. This was very much to my disappointment because I had asked a few of my colleagues who had gone for the exam and they told me that the same focimeter as the one used in my hospital is the one which is used in the exam. I think it is safe to assume then that the centre of the examination also had an INAMI focimeter, or something similar to that. Another candidate agreed that although she had seen the focimeter namely the Topcon one, the illumination was poor and the dials couldn't be read properly. I suggest in future, that candidates be asked which focimeter they are most familiar with prior to the exam and that that candidate should be slotted into a station where the machine he/she most commonly use in his setting. This will truly allow the candidate to be assessed properly. It took me the duration to station to learn the machine and even then I still struggled with it towards the end of the 4 minutes. There simply was not enough time to learn the machine and then to perform the focimetry. In all, I feel the assessment was slightly lopsided in that it focused too heavily on the other parts of refraction which were more subjective. I think what is more needed, is for accurate objective refractions and hence more stations on a person's objective refraction should be made available
- I did not read in the instruction sheets that we were allowed to bring our own equipment – specifically retinoscope. Perhaps this was my oversight, but if not, this should be made known to all candidates prior to taking the exam. It would be nice if the candidates are given the option of completing the refraction (retinoscopy and subjective modification) stations using a phoropter.
- I felt the focimetry station was a little unfair. The glasses were badly scratched and the bifocal segments were very small and almost impossible to view on the focimeter. The examiner didn't allow me to mark the optical centre of the spectacles and said "Oh don't worry about that" even though I needed to do so to determine horizontal prism for which marks were allocated. In addition the focimeter type was unfamiliar to me and the controls were not like the one pictured in the instructions. I think the marks allocated for reading add and prism should be disregarded for this sitting, and in future exams appropriate spectacles should be used and candidates should be told what model of focimeter to expect so they can familiarize themselves with it in advance. Other comments are that the exam is quite expensive and that results should be out faster if possible. The College should also clarify the value of the certificate as a qualification, e.g. does it entitle one to practice refraction privately as an ophthalmic medical practitioner (OMP)? This information is not apparent on the College website. On the whole the exam was well-organised and of a high standard and I appreciate the hard work that goes into ensuring this - thank you for your efforts.



## Team 2 comments:

- I would like to make some suggestions:
  1. Overseas candidates have different vision charts and instruments back home. It would be fair if you allow them to be in your system for two days so that they can fine tune their preparation and perform in the limited time available.
  2. Examiners should be more cooperative.
  3. Examination, travel and accommodation in U.K is very expensive for candidates from developing countries so this is a kind request that part II and part III can be combined in U.K. or alternatively part II can also be done in the same centres where part I exam is being conducted.
  4. MONEY IS A GREAT PROHIBITING FACTOR for those in developing countries, with this price tag you are making it difficult for meritorious candidates to clear this exam
- It would be useful to have an actual 'mark sheet' in the information pack. The format of the answer sheet is alluded to in the pack, but I still found the actual mark sheet a little difficult to work out in the heat of the exam
- I think the proposals made by the college to change the Refraction Certificate to allow longer stations to perform full retinoscopy are valid. With regards to the examination feedback provided with the results. It would have been useful to be given a mark scheme for the technique sections of the practical skills assessments (e.g. cycloplegic retinoscopy, non –cycloplegic retinoscopy) so I could see where I lost marks and could improve my technique.
- I truly believe that the 5minutes is not enough in some stations, it does not give time to write down our results and when we rush to do so, we write down the wrong answers, just to get something down on the answer sheet. It does not therefore reflect our true exam performance. Some candidates may have a good technique and because of the tight time constraints, may end up writing the incorrect answers as they are rushing towards the end. I think we deserve to be given a chance to adequately record our results without being asked to stop writing and more weighting should be placed on our examination technique throughout our exam, rather than only on the written answers on paper. ( within a reasonable margin of error naturally)