BrienHoldenVisionInstitute

BEST VISION SPHERE REFRACTION

A best vision sphere refraction is the first part of a refraction examination that you should conduct for all people who you suspect to have refractive error.

AIM

This unit teaches you how to perform a subjective best vision sphere (BVS) refraction.

LEARNING OUTCOMES

When you have worked through this unit you should be able to:

- explain what is meant by the BVS
- explain the limitations of the BVS for people who have astigmatism
- demonstrate how to perform a BVS refraction
- recognise when a BVS refraction is being affected by uncontrolled accommodation and know what to do about it.

CORRECTING REFRACTIVE ERROR

SUBJECTIVE REFRACTION

Refractive error can be measured objectively or subjectively. A subjective refraction measures the refractive error of a person by asking them what they see on a visual acuity (VA) chart when lenses of different powers are put in front of their eyes.

There are three main types of subjective refraction:

- best vision sphere (BVS) refraction: measures hyperopia and myopia.
- sphero-cylindrical refraction: measures hyperopia, myopia and astigmatism.
- near refraction: measures presbyopia.

The first step of both a sphero-cylindrical refraction and a near refraction is to find the BVS.

When you have finished a BVS refraction, you will know whether you need to perform a sphero-cylindrical refraction.

If the BVS is plano (zero power), the person does not have a distance spherical refractive error.

The goal of performing a refraction is to find the clearest and most comfortable lens. This is the most plus (or least minus) lens that gives the best VA. The most common mistake that examiners make when they conduct a refraction is prescribing the person more minus than they need (or not enough plus).

When you are performing a refraction you must remember to:

- control the person's accommodation
- check to make sure the person has not been given too much minus.

ASTIGMATISM AND BVS

If a person has astigmatism, the BVS will give the person the best vision that is possible with a spherical lens, but it will not correct their astigmatism. This means that BVS VA for a person with astigmatism may be poor. A person with astigmatism needs a cylindrical lens in addition to the BVS to correct their astigmatism, provide them with good vision and minimise any symptoms they may be experiencing.

Spherical lenses correct hyperopia, myopia and presbyopia.

Spherical lenses do not correct astigmatism.

Cylindrical lenses correct astigmatism.

It is usually best-practice to perform a sphero-cylindrical refraction for all people, as even small amounts of astigmatism can cause asthenopia.

However, if the person is not reporting any symptoms, the BVS alone may be adequate to improve a person's vision, and can therefore be given as their spectacle prescription.

METHOD

PERFORMING A BVS REFRACTION

The best way to learn how to perform a BVS refraction is to practise it yourself as often as possible. With practise you will become efficient. This unit will show you how to perform a BVS refraction using three learning methods:

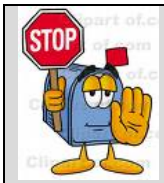
- step-by-step instructions
- case studies
- flow charts (in the summary).

A BVS refraction can be performed using either a refractor head, or a trial frame and lenses.

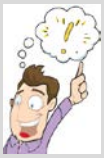
STEP-BY-STEP INSTRUCTIONS

STEP 1	If you have a starting prescription (retinoscopy, auto-refraction or a previous prescription), place this in the trial frame or refractor head. Write down the VA measured with this starting prescription. If you have no starting prescription, measure and write down the unaided VA for each eye.
STEP 2	Measure the interpupillary distance (PD) and adjust the trial frame or refractor head for that PD.
STEP 3	Occlude the eye not being tested. It is convention to refract the right eye first.
STEP 4	The person's VA will help you decide which lens to start with. If the VA is: • **6/19 or better** → start with **+0.50 D** then **–0.50 D** • **6/19 to 6/60** → start with **+1.50 D** then **–1.50 D** • **worse than 6/60** → start with **+3.00 D** then **–3.00 D** **or maybe even:** → start with **+5.00 D** then **–5.00 D** You might choose to use a ±5.00 D lens instead of a ±3.00 D lens if the person's VA is extremely poor. *Always* begin with plus lenses before minus lenses. This helps to control accommodation. Only introduce minus lenses if the VA gets worse with plus lenses.
STEP 5	If using a trial frame, hold the trial lens that you have chosen in front of the right eye. You are going to show the person what their vision is like with and without the extra lens. If using a refractor head, the person will not easily understand which is the 'extra' lens as you will simply be turning the spherical power wheel. To make it simpler for the person it is easier to number the two views and ask them which view they prefer. Sometimes the two views you want to show the person are separated by several 'clicks' on the spherical power wheel. Try to turn the sphere wheel quickly so it is clear to the person which lens is number 1 and which is number 2. Direct the person: *"Look at the letter chart."* *"Look at the smallest line that you can see."* Ask the person: *"Does this lens make the chart look BETTER, WORSE, or the SAME?"* You might need to show the person the chart with and without the lens a few times. Always check the VA to make sure that the vision really is what the person says it is ("better", "worse" or "the same"). For example, if the person says "better," make sure they can read more letters on the chart. Sometimes people get confused and tell you that their vision is "better" when really it is "the same". You need to be extremely careful! This is especially important when you are adding minus lenses, and particularly when performing refractions on young people. Another way you can ask the question is: *"Does this lens make it look CLEARER, or only SMALLER and DARKER?"* This question is especially useful if you are trying minus lenses. If it only looks "*smaller and darker*" it is the same as the person telling you that it looks *"the same."*

STEP-BY-STEP INSTRUCTIONS (cont.)

STEP 6	If the person sees: • Better: put the lens in the trial frame (or if using a refractor head, leave this new setting in place). • Worse: do not put the lens in the trial frame (or if using a refractor head, return to the previous setting). • Same: - If it is a plus lens: put the lens in the trial frame (or if using a refractor head, leave the new setting in place). - If it is a minus lens: do not put the lens in the trial frame (or if using a refractor head, return to the previous setting).
STEP 7	• If you did not alter the power of the spherical lens: – if the lens you tried was a plus lens → now try the minus lens and repeat Steps 5 and 6. – if the lens you tried was a minus lens → go to Step 9. • If you did alter the power of the spherical lens: Measure the VA with this new lens. Repeat Steps 4, 5 and 6 until you find a lens that: • after adding +0.25 DS makes the VA worse • after adding -0.25 DS makes the VA worse, or does not change/improve VA. If using a trial frame, combine trial lenses if you need to. If you have two or three lenses in front of one eye, the trial frame can be heavy on the person's nose. It is also harder for the person to see through several layers of glass than it is just one. You can add up the total power of all the spherical lenses and replace them with just one lens that has the total power. **Example** There are two spherical lenses in the right cell of the trial frame: +1.00 D and –0.25 D. You can add these two lenses together: • put a +0.75 D lens into the trial frame and remove the +1.00 D and –0.25 D lenses. To help control accommodation when using a trial frame, if you are replacing several lenses with just one: • plus lens → put the new plus lens into the trial frame before removing the other lenses • minus lens → remove the other lenses before putting the new minus lens into the trial frame.  **WARNING** Young people will often tell you that the minus lens that you are trying makes their vision look "*better*"… …but when you check their vision they can only see the same line on the VA chart. This indicates that their vision is not really improving. When this happens you know that the person is accommodating. They do not need the minus lens, so you do not add the minus lens to their overall spherical power.

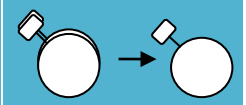
STEP-BY-STEP INSTRUCTIONS (cont.)

STEP 8	Ask yourself if your BVS findings make sense: • Does it fit with the case history? • Does it fit with the unaided VA? If the results do not seem sensible, ask yourself: • Is the person accommodating? Have you over-minused? • Did the person understand your instructions and questions? • Did you understand the person's answers? If the BVS findings do not make sense, repeat Steps 4 to 8.
STEP 9	Check your final result. Introduce a +0.25 D lens in front of the person's eye: • the person should say their vision is blurred. Introduce a –0.25 D lens in front of the person's eye: • the person should say their vision is the same.  ***REMEMBER*** If the person says that the minus lens only makes it look "smaller and darker" it is really just the same, not better.
STEP 10	Write down the power of the lens in the trial frame or refractor head. This is the BVS lens. Measure and write down the person's VA through this BVS lens. This is the BVS VA.
STEP 11	Repeat Steps 1 to 10 for the left eye.

CASE STUDIES

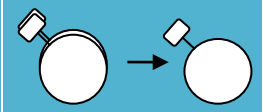
The following examples only demonstrate the refraction results from a single eye. Furthermore, all examples are conducted in a trial frame (the same logic would apply if conducted using a refractor head).

Case 1: Person with moderate hyperopia
VA (unaided): 6/19+2 VA (pinhole): 6/7.5

STEP	VA	TRYING THIS TRIAL LENS	PERSON'S RESPONSE	VA	WHAT DO YOU DO?	TOTAL POWER 
A	6/19+2 unaided	+0.50 DS	"Better"	6/12	Put +0.50 DS in trial frame	***+0.50 DS***
B	6/12 with +0.50 DS lens	+0.50 DS	"Better"	6/9.5+3	Put a +1.00 DS lens in the trial frame, then remove the +0.50 DS lens.	***+1.00 DS***
C	6/9.5+3 with +1.00 DS lens	+0.50 DS	"Same"	6/7.5+2	Put a +1.50 DS lens in the trial frame, then remove the +1.00 DS lens.	***+1.50 DS***
D	6/7.5+2 with +1.50 DS lens	+0.50 DS	"Worse"	6/9.5	Do not add lens to trial frame	***+1.50 DS***
CHECK AGAIN:						
E	6/7.5+2 with +1.50 DS lens	+0.25 DS	"Same"	6/6	Put a +1.75 DS lens in the trial frame, then remove the +1.50 DS lens.	***+1.75 DS***
F	6/6 with +1.75 DS lens	+0.25 DS	"Worse"	6/7.5+	Do not add lens to trial frame	***+1.75 DS***
G	6/6 with +1.75 DS lens	–0.25 DS	"Same" or "Smaller and darker"	6/7.5+2	Do not add lens to trial frame	**The BVS for this eye is +1.75 DS.** This is the most plus power that still gives the best VA

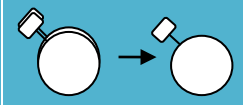
CASE STUDIES (cont.)

Case 2: Person with low hyperopia
VA (unaided): 6/9.5+ VA (pinhole): 6/6

STEP	VA	TRYING THIS TRIAL LENS	PERSON'S RESPONSE	VA	WHAT DO YOU DO?	TOTAL POWER 
A	6/9.5+ unaided	+0.50 DS	"Better"	6/7.5	Put +0.50 DS in trial frame	***+0.50 DS***
B	6/7.5 with +0.50 DS lens	+0.50 DS	"Better"	6/6	Put a +1.00 DS lens in trial frame, then remove the +0.50 DS lens	***+1.00 DS***
C	6/6 with +1.00 DS lens	+0.25 DS	"Same"	6/6	Put a +1.25 DS lens in the trial frame, then remove the +1.00 DS lens.	***+1.25 DS***
D	6/6 with +1.25 DS lens	+0.25 DS	"Worse"	6/7.5	Do not add lens to trial frame	***+1.25 DS***
CHECK AGAIN:						
E	6/6 with +1.25 DS lens	+0.25 DS	"Worse"	6/7.5+	Do not add lens to trial frame	***+1.25 DS***
F	6/6 with +1.25 DS lens	–0.25 DS	"Same" or "Smaller and darker"	6/6	Do not add lens to trial frame	**The BVS for this eye is +1.25 DS** This is the most plus power that still gives the best VA

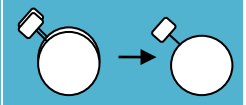
CASE STUDIES (cont.)

Case 3: Person with moderate hyperopia
VA (unaided): 6/60 VA (pinhole): 6/6

STEP	VA	TRYING THIS TRIAL LENS	PERSON'S RESPONSE	VA	WHAT DO YOU DO?	TOTAL POWER 
A	6/60 unaided	+1.50 DS	"Better"	6/24	Put +1.50 DS in trial frame	***Total in trial frame: +1.50 DS***
B	6/24 with +1.50 DS lens	+1.50 DS	"Better"	6/9.5+	Put a +3.00 DS lens in the trial frame, then remove the +1.50 DS lens.	***+3.00 DS***
C	6/9.5+ with +3.00 DS lens	+0.50 DS	"Worse"	6/19+2	Do not add lens to trial frame	***+3.00 DS***
D	6/9.5+ with +3.00 DS lens	–0.50 DS	"Better"	6/6	Put a +2.50 DS lens in the trial frame, then remove the +3.00 DS lens.	***+2.50 DS***
E	6/6 with +2.50 DS lens	+0.25 DS	"Same"	6/6	Put a +2.75 DS lens in the trial frame, then remove the +2.50 DS lens.	***+2.75 DS***
CHECK AGAIN:						
F	6/6 with +2.75 DS lens	+0.25 DS	"Worse"	6/7.5+	Do not add lens to trial frame	***+2.75 DS***
G	6/6 with +2.75 DS lens	–0.25 DS	"Same" or "Smaller and darker"	6/6	Do not add lens to trial frame	**The BVS for this eye is +2.75 DS** This is the most plus power that still gives the best VA

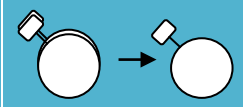
CASE STUDIES (cont.)

Case 4: Person with low myopia
VA (unaided): 6/12 VA (pinhole): 6/6

STEP	VA	TRYING THIS TRIAL LENS	PERSON'S RESPONSE	VA	WHAT DO YOU DO?	TOTAL POWER 
A	6/12 unaided	+0.50 DS	"Worse"	6/19	Do not add lens to trial frame	***plano (0.00)***
B	6/12 unaided	–0.50 DS	"Better"	6/7.5	Put –0.50 DS in trial frame	***–0.50 DS***
C	6/7.5 with –0.50 DS lens	–0.50 DS	"Better"	6/6	Take the -0.50 DS lens out of the trial frame, then add the -1.00 DS lens.	***–1.00 DS***
D	6/6 with –1.00 DS lens	+0.25 DS	"Same"	6/6	Take the -1.00 DS lens out of the trial frame, then add the -0.75 DS lens	***–0.75 DS***
CHECK AGAIN:						
E	6/6 with –0.75 DS lens	+0.25 DS	"Worse"	6/7.5+	Do not add lens to trial frame	***–0.75 DS***
F	6/6 with –0.75 DS lens	–0.25 DS	"Same" or "Smaller and darker"	6/6	Do not add lens to trial frame	**The BVS for this eye is –0.75 DS** This is the least minus power that still gives the best VA

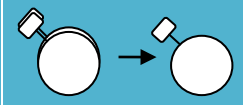
CASE STUDIES (cont.)

Case 5: Person with high myopia
VA (unaided): CF @ 2m VA (pinhole): 6/6

STEP	VA	TRYING THIS TRIAL LENS	PERSON'S RESPONSE	VA	WHAT DO YOU DO?	COMBINING LENSES 
A	CF @ 2m unaided	+3.00 DS	"Worse"	CF @ 0.5m	Do not add lens to trial frame	***plano (0.00)***
B	CF @ 2m unaided	–3.00 DS	"Not sure"		Need to use larger steps in lens power	***plano (0.00)***
C	CF @ 2m unaided	–5.00 DS	"Better"	6/19	Put –5.00 DS in trial frame	***–5.00 DS***
D	6/19 with –5.00 DS lens	+0.50 DS	"Worse"	6/30	Do not add lens to trial frame	***–5.00 DS***
E	6/19 with –5.00 DS lens	–0.50 DS	"Better"	6/12+2	Take the -5.00 DS lens out of the trial frame, then add the -5.50 DS lens.	***–5.50 DS***
F	6/12+2 with –5.50 DS lens	–0.50 DS	"Better"	6/6	Take the -5.50 DS lens out of the trial frame, then add the -6.00 DS lens.	***–6.00 DS***
G	6/6 with –6.00 DS lens	+0.25 DS	"Worse"	6/7.5+2	Do not add lens to trial frame	***–6.00 DS***
H	6/6 with –6.00 DS lens	–0.25 DS	"Same"	6/6	Do not add lens to trial frame	***–6.00 DS***
CHECK AGAIN:						
I	6/6 with –6.00 DS lens	+0.25 DS	"Worse"	6/7.5+2	Do not add lens to trial frame	***–6.00 DS***
J	6/6 with –6.00 DS lens	–0.25 DS	"Same" or "Smaller and darker"	6/6	Do not add lens to trial frame	**The BVS for this eye is –6.00 DS** This is the least minus power that still gives the best VA

CASE STUDIES (cont.)

Case 6: Person with astigmatism
VA (unaided): 6/15 unaided VA (pinhole): 6/6

STEP	VA	TRYING THIS TRIAL LENS	PERSON'S RESPONSE	VA	WHAT DO YOU DO?	TOTAL POWER 
A	6/15 unaided	+0.50 DS	"Better"	6/12	Add +0.50 DS to trial frame	***+0.50 DS***
B	6/12 with +0.50 DS lens	+0.50 DS	"Worse"	6/15+2	Do not add lens to trial frame	***Total in trial frame: +0.50 DS***
CHECK AGAIN:						
C	6/12 with +0.50 DS lens	+0.25 DS	"Worse"	6/15+3	Do not add lens to trial frame	***+0.50 DS***
D	6/12 with +0.50 DS lens	–0.25 DS	"Same"	6/12	Do not add lens to trial frame	**The BVS for this eye is +0.50 DS** This is the most plus power that still gives the best VA

Why is the BVS not giving 6/6 vision?

Notice that the pinhole VA is 6/6.
- This means that the cause of the poor VA is refractive error.

The BVS examination uses spherical plus and minus lenses to improve the vision.
- Hyperopia and myopia can be corrected by plus and minus lenses.
- Astigmatism cannot be corrected by spherical lenses.

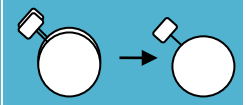
If the BVS refraction does not improve the vision to give the same VA as the pinhole VA then you know that the person has astigmatism.
A person with astigmatism will need cylindrical lenses added to the BVS to see clearly.

A sphero-cylindrical refraction is needed to measure astigmatism.

Remember, although the person may achieve relatively good VA with a spherical lens alone, small amounts of uncorrected astigmatism may cause asthenopia. Therefore, it is normally best practice to perform a sphero-cylindrical refraction in all people.

CASE STUDIES (cont.)

Case 7: Person with myopia and uncontrolled accommodation
VA (unaided): 6/48 VA (pinhole): 6/6

STEP	VA	TRYING THIS TRIAL LENS	PERSON'S RESPONSE	VA	WHAT DO YOU DO?	TOTAL POWER 
A	6/48 unaided	+1.50 DS	"Worse"	<6/60	Do not add lens to trial frame	***plano (0.00)***
B	6/48 unaided	–1.50 DS	"Better"	6/38	Put –1.50 DS in trial frame	***–1.50 DS***
C	6/38 with –1.50 DS lens	–1.50 DS	"Better"	6/9.5+	Take the -1.50 DS lens out of trial frame, then add the -3.00 DS lens.	***–3.00 DS***
D	6/9.5+ with –3.00 DS lens	+0.50 DS	"Worse"	6/12	Do not add lens to trial frame	***–3.00 DS***
E	6/9.5+ with –3.00 DS lens	–0.50 DS	"Better"	6/6	Take the -3.00 DS lens out of trial frame, then add the -3.50 DS lens.	***–3.50 DS***
F	6/6 with –3.50 DS lens	+0.25 DS	"Worse"	6/6	As their VA did not get worse: Take the -3.50 DS lens out of trial frame, then add the -3.25 DS lens.	***–3.25 DS***
	The person tells you that the chart looks worse with the +0.25 D lens, but they can still see 6/6 (the same!) This makes you think that they are accommodating. ***This is a warning sign… Watch out!***					
G	6/6 with –3.25 DS lens	–0.25 DS	"Same"	6/6	Do not add lens to trial frame	***–3.25 DS***
CHECK AGAIN:						
H	6/6 with –3.25 DS lens	+0.25 DS	"Worse"	6/12	Do not add lens to trial frame	***–3.25 DS***
	Did you notice that this time the person can only see 6/12 when they look through –3.00 DS (–3.25 + +0.25)? Earlier they could see 6/9.5+ with that same –3.00 DS power. ***This is another warning sign… This person has active accommodation.***					
I	6/9.5 with –3.25 DS lens	← What has happened?! The person could see 6/6 with a –3.25 DS lens before – now they can only see 6/9.5. ***This person is accommodating!***				

CASE STUDIES (cont.)

The RIGHT thing to do for someone who is accommodating:

Ask the person to try hard to read some letters on the next line.
Tell them that it is ok to guess, even if they are not sure.

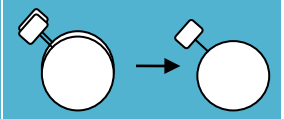
Give the person time to let their eyes relax… then ask them to try again.

If you have patience (and go slowly) the person's accommodation will relax and you can continue your refraction.

Another way to relax accommodation:

Add extra plus to the trial frame or refractor head and ask the person to let their eyes relax.
Then slowly reduce the amount of plus in front of the eye BUT be careful not to continue if the VA is not improving.

This example is a continuation of Example 7 above:

STEP	VA	TRYING THIS TRIAL LENS	PERSON'S RESPONSE	VA	WHAT DO YOU DO?	TOTAL POWER 
J	6/9.5 with –3.25 DS lens	You ask the person to try hard to see letters on the next line.		6/9.5+4 with –3.25 DS lens		***–3.25 DS***
K	6/9.5+4 with –3.25 DS lens	You ask the person to let their eyes relax and keep looking at the chart. After some time you ask them to read the chart again.		6/6 with –3.25 DS lens		***–3.25 DS***
CHECK AGAIN:						
L	6/6 with –3.25 DS lens	+0.25 DS	"Worse"	6/12 *(This is surprising as it is a change of three lines with 0.25 DS instead of only one line)*	You ask the person to try hard to see letters on the next line. You ask them to relax. After some time, you ask them to read the chart again.	
				6/7.5	Do not add lens to trial frame	***–3.25 DS***
M	6/6 with –3.25 DS lens	–0.25 DS	"Better" and "Smaller and darker"	6/6 *Note: This VA is not better. It is the same.*	Do not add lens to trial frame	**The BVS for this eye is –3.25 DS.** This is the least minus power that still gives the best VA.

RIGHT METHOD

CASE STUDIES (cont.)

The WRONG thing to do for someone who is accommodating:

The example is a continuation of Example 7:

STEP	VA	TRYING THIS TRIAL LENS	PERSON'S RESPONSE	VA	WHAT A CARELESS EXAMINER DOES – THIS IS WRONG !	
J	6/9.5 with –3.25 DS lens	Remember: in Step I the person went from seeing 6/6 with the –3.25 DS lens to 6/9.5.			A careless examiner keeps adding minus until the person sees 6/6 again… *This is the wrong thing to do!*	
K	6/9.5 with –3.25 DS lens	+0.50 DS	"Worse"	6/12	Do not add lens to trial frame	***–3.25 DS***
L	6/9.5 with –3.25 DS lens	–0.50 DS	"Better"	6/7.5+2	Add –0.50 DS to trial frame	***–3.75 DS***
M	6/7.5+2 with –3.75 DS lens	–0.50 DS	"Better"	6/6	Add –0.50 DS to trial frame	***–4.25 DS***
N	6/6 with –4.25 DS lens	+0.25 DS	"Worse"	6/7.5+4	Do not add lens to trial frame	***–4.25 DS***
O	6/6 with –4.25 DS lens	–0.25 DS	"Same"	6/6	Do not add lens to trial frame	**The careless examiner who keeps adding minus lenses THINKS that the BVS for this eye is –4.25 DS.** This eye is over-minused because the person was accommodating → this BVS is wrong!

WRONG METHOD

In the example above, the examiner has continued to add more minus as the person continues to accommodate. The examiner did not pay attention to the warning signs and did not realise that the person was accommodating.

The examiner used the wrong method
→ the person has been over-minused!

If the examiner had used the right method the person's BVS would be correctly determined to be –3.25 DS.
With the wrong method the person's BVS has been recorded as –4.25 DS!

If spectacles are made using this wrong BVS, the person will be over-minused and they will have too much minus in their spectacles.

A person who has too much minus in their spectacles will probably get asthenopia (eye strain).

Asthenopic symptoms include: sore eyes, tired eyes and/or headaches.

A person who has been given too much minus may tell you that their eyes do not feel comfortable when they wear their spectacles.

SUMMARY: BEST VISION SPHERE (BVS) REFRACTION

CORRECTING REFRACTIVE ERROR

Subjective refraction

- A subjective refraction measures the refractive error of a person by asking them what they see on a visual acuity (VA) chart when lenses of different powers are placed in front of their eyes.

There are three types of subjective refraction:
  - BVS refraction (measures hyperopia and myopia)
  - sphero-cylindrical refraction (measures hyperopia, myopia and astigmatism)
  - near refraction (measures presbyopia).

- The first step of both a sphero-cylindrical refraction and a near refraction is to find the BVS.

Best vision sphere (BVS)

- The BVS is the highest powered plus spherical lens (or lowest powered minus lens) that can be put in front of a person's eye to give the best VA that is possible with a spherical lens.

- Sometimes there are many spherical lenses that give the person the same VA. The BVS is the most plus (or least minus) of these lenses.

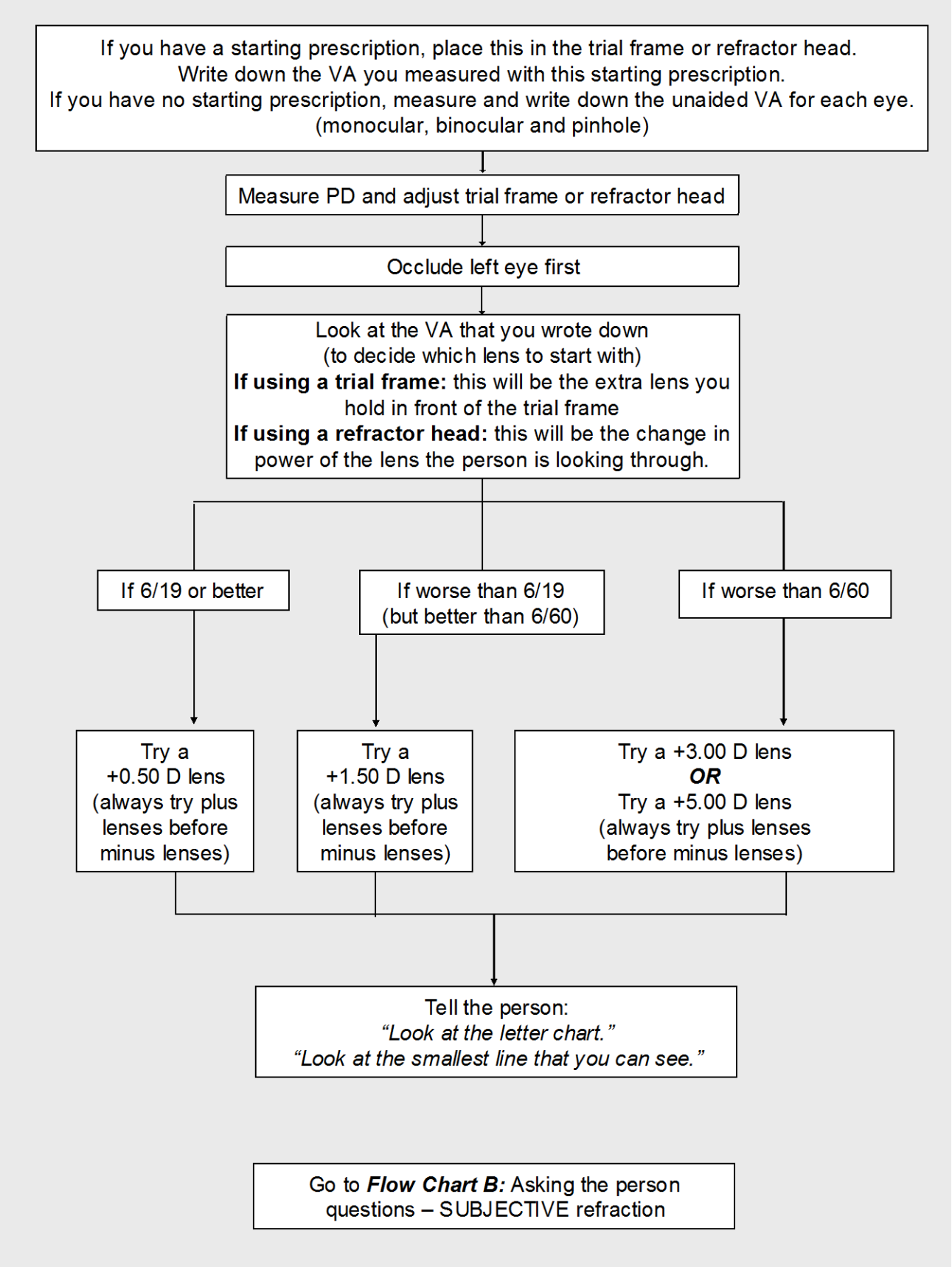
Astigmatism and the BVS

- If a person has astigmatism, the BVS will give the person the best vision that is possible with a spherical lens, but it will not correct their astigmatism. This means that BVS VA for a person with astigmatism will not be as good as it could be if they have a sphero-cylindrical refraction.

- A person with astigmatism needs a cylindrical lens in addition to the BVS.

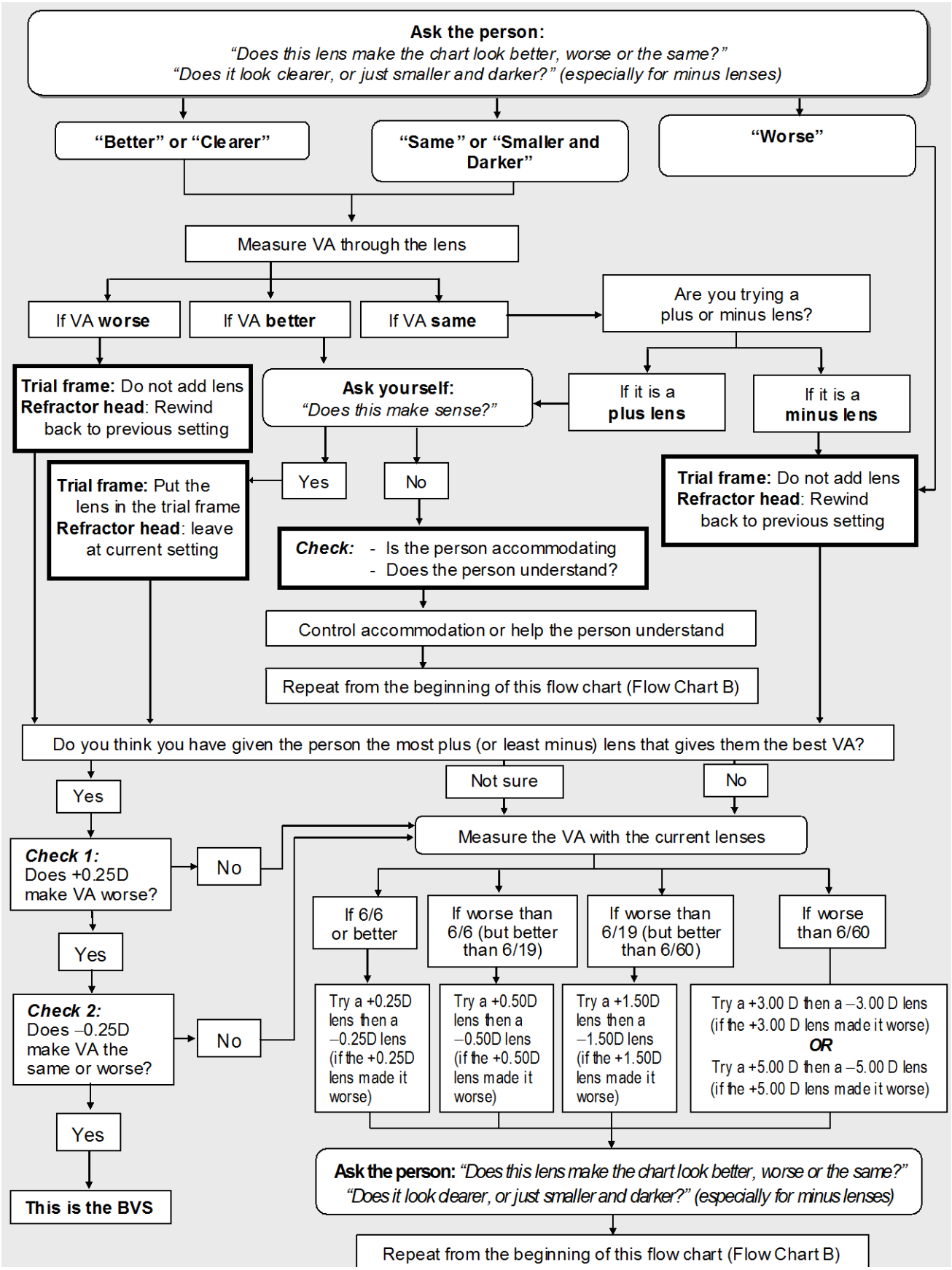
SUMMARY: BEST VISION SPHERE (BVS) REFRACTION

Flow Chart A: Selecting the first trial lens



SUMMARY: BEST VISION SPHERE (BVS) REFRACTION (cont.)

Flow Chart B: Asking the person questions – SUBJECTIVE refraction



TEST YOURSELF QUESTIONS

1. **What is a subjective best vision sphere refraction?**

_____

_____

2. **Will a person with astigmatism be able to see perfectly through the best vision sphere? Please explain your answer.**

_____

_____

3. **How can you check that the person really sees "better" when you show them a new lens?**

_____

_____

4. **What can you do to help prevent a person accommodating during a refraction?**

_____

_____

5. **What questions should you ask yourself to make sure that your refraction results make sense?**

_____

_____

6. **What should you do if you think the person is accommodating while you are performing a refraction?**

_____

_____

NOTES