



PRESCRIBING READYMADE SPECTACLES

THINK

A 55 year old woman sees perfectly in the distance, but needs to get spectacles to help her sew. She looks at the spectacle frames that you have on display in your clinic, but she is worried when you tell her how much custom-made spectacles cost. She thinks that she will not be able to get spectacles after all.

You show the woman the readymade spectacles that you have available and she is delighted that you have a low cost option for her.

AIM

This unit provides recommendations and guidelines for prescribing readymade spectacles.

LEARNING OUTCOMES


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

- explain the situations when you can prescribe readymade spectacles
- prescribe readymade spectacles
- select a readymade spectacle frame that best fits a person.


REVIEW: PRESCRIBING READYMADE SPECTACLES

REFRACTION CHECK	<ul style="list-style-type: none"> When you have finished your refraction, you need to check your results to make sure that the person's vision is clear and comfortable. Show the person the limitations of their new spectacles <ul style="list-style-type: none"> → perhaps distance vision is clear but near vision is blurry → perhaps near vision is clear but distance vision is blurry.
BEFORE YOU PRESCRIBE	<ul style="list-style-type: none"> Some conditions and medication can cause a person's refraction to change. These include: <ul style="list-style-type: none"> – people with diabetes – women who are pregnant – people taking some medications (including some anti-depressants, anti-psychotics and steroids).
PRESCRIBING SPECTACLES	<ul style="list-style-type: none"> Always tell people that new spectacles take time to get used to <ul style="list-style-type: none"> → Allow 2 weeks for adaptation → Tell the person to come back after 2 weeks if they are still having difficulties with their new spectacles.
READYMADE SPECTACLES	<ul style="list-style-type: none"> Much less expensive than custom-made spectacles (such as single vision, bifocal, and progressive spectacles). Can be prescribed if they give comfortable vision to the person, and if the person is happy with the vision that they get with them.
PRESCRIBING CORRECTION FOR A PERSON WHO HAS ASTIGMATISM	<ul style="list-style-type: none"> There are several prescribing options for astigmatism: <ul style="list-style-type: none"> – full astigmatic correction – partial astigmatic correction – no astigmatic correction. If you decide to prescribe a partial astigmatic correction or no astigmatic correction the person's vision will not be as clear as it would be with a full astigmatic correction. If you decide to prescribe no astigmatic correction you must calculate the equivalent sphere of the cylinder and add it to the sphere of your final prescription. Equivalent Sphere = Power of Sphere + $\frac{1}{2}$ Power of Cylinder
INTERPUPILLARY DISTANCE (PD)	<ul style="list-style-type: none"> PD is the distance (in mm) between a person's pupils. Spectacles must be made with the correct PD. If spectacles are made with the wrong PD, the person's eyes will not be comfortable and they might not be able to wear them.

READYMADE SPECTACLES

<p>WHAT ARE READYMADE SPECTACLES (RMS)?</p>	<ul style="list-style-type: none"> • Mass-produced spectacles that are not made individually to suit each person. • Available in a limited range of powers and styles. Usually: <ul style="list-style-type: none"> → ± 1.00 D to ± 4.00 D: in 0.50 D steps → ± 4.00 D to ± 6.00 D: in 1.00 D steps • Both the right and the left lenses are the same power • Use spherical lenses only – no astigmatic correction • The interpupillary distance (PD) of readymade spectacles cannot be changed to suit each person • Usually made with single vision lenses only • Occasionally bifocal lenses are available – but these are rare: <ul style="list-style-type: none"> → top part (for distance vision) is always plano → bottom “seg” part (for near vision) is a plus sphere.
<p>ADVANTAGES OF RMS</p>	<ul style="list-style-type: none"> • Much less expensive than custom-made spectacles because they are mass-produced. • Stock of RMS can be kept in the clinic so that they can be given to the person immediately – the person does not need to wait for their spectacles to be made, or come back to collect them. • Will adequately correct the refractive errors of a large percentage of people.
<p>DISADVANTAGES OF RMS</p>	<ul style="list-style-type: none"> • Do not always fully correct a person's refractive error <ul style="list-style-type: none"> → in most cases RMS will be good enough → in some cases RMS will not help the person and they must get custom-made spectacles. • If the distance between the optical centres of the lenses and the person's PD is very different (especially for higher powered RMS) the person may get asthenopia or double vision. • Available in a limited range of powers and styles; not suitable for high power prescriptions. • Have the same powers for right and left lenses, so may not be suitable for people with anisometropia. • Not available in astigmatic correction. <div data-bbox="462 1565 1517 1968">  <p>You can ask the person to try the RMS in your clinic:</p> <ul style="list-style-type: none"> – Ask the person if their vision is clear – Ask the person if their eyes feel comfortable – Show the person the difference between the RMS and their prescription lenses in the trial frame; ask the person if they notice much difference – Tell the person the cost of RMS compared with custom-made spectacles. <p>If the person tells you that their vision is clear and their eyes feel comfortable, you can prescribe RMS – but let the person make the final decision.</p> </div>

PRESCRIBING RMS

WHEN TO PRESCRIBE RMS	<p>You can prescribe RMS for a person if:</p> <ul style="list-style-type: none"> the person's prescription is less than ± 6.00 D (unless there are no custom-made spectacles available) there is less than 1.00 D of anisometropia (difference in power between the right and left eyes) there is less than -1.00 DC of astigmatism the person says that they see clearly with the RMS, they are happy with the look of the RMS and that their eyes feel comfortable when they wear them.
IF REFRACTIVE ERROR IS SPHERICAL AND THE SAME IN BOTH EYES	<ul style="list-style-type: none"> Choose the exact RMS power that the person needs. If the exact RMS power is not available, choose the power that is slightly weaker than the person needs.
IF REFRACTIVE ERROR IS SPHERICAL AND DIFFERENT IN EACH EYE	<ul style="list-style-type: none"> If anisometropia is greater than 1.00 D the person probably cannot wear RMS – they will need custom-made spectacles instead. If anisometropia is less than 1.00 D the person can probably wear RMS. <p>Readymade spectacles have the same lens power for both eyes.</p> <p>If a person has a different refractive error for each of their eyes only one of the eyes can be fully corrected.</p> <p>You can:</p> <ul style="list-style-type: none"> fully correct the eye needing the weaker lens, and under-correct the other eye (give less power than is needed), or fully correct the eye needing the stronger lens, and overcorrect the other eye (give more power than is needed). <p>To decide which power of RMS to prescribe, think about:</p> <ul style="list-style-type: none"> Refractive error → usually we correct the eye that needs the weakest power Visual acuity (VA). → if one eye has poor VA, always give the RMS power that best corrects the "good" eye. Age → if a presbyopic person needs distance spectacles, you might decide to give them the exact power for one eye and more plus for the other eye (this can give them a small amount of monovision and help them see things that are closer to them as well as things in the distance). <div data-bbox="469 1619 1522 1935">  <p>If you have trouble deciding between two RMS powers:</p> <ul style="list-style-type: none"> let the person try two pairs of RMS with the two different powers ask the person which pair of RMS they prefer (based on vision and comfort). <p>Be careful!</p> <p>If you show the person two different frame styles they may think that you want them to choose based on the appearance of the frames, not the vision they get with the lenses! Good communication is extremely important!</p> </div>


PRESCRIBING RMS (cont.)

<p>EXAMPLE 1</p>	<p>A 30 year old man has this refractive error: R +3.00 D (6/6-) L +3.75 D (6/6-)</p> <p>You need to choose whether to correct the right eye or the left eye:</p> <p>→ You would probably choose to correct the right eye because we usually correct the eye that needs the weakest power.</p> <p>You decide to prescribe +3.00 D RMS.</p>
<p>EXAMPLE 2</p>	<p>A 25 year old woman has this refractive error: R -3.00 D (6/6) L -2.25 D (6/6)</p> <p>You need to choose whether to correct the right eye or the left eye:</p> <p>→ You would probably choose to correct the left eye because we usually correct the eye that needs the weakest power.</p> <p>You do not have a pair of -2.25 D RMS, but you do have -2.00 D RMS and -2.50 D RMS.</p> <p>You let the woman try on both the -2.00 D RMS and -2.50 D RMS, and ask her which one she prefers, since both could be suitable.</p> <p>→ The -2.00 D would be good as we usually correct the eye that needs the weakest power</p> <p>→ The -2.50 D would also be good as it is still weaker than the power needed for the other eye.</p> <p>You give the woman a pair of each to try on:</p> <p>→ The woman tells you that she prefers her vision with the -2.50 D RMS and her eyes feel comfortable.</p> <p>You prescribe the -2.50 D RMS preferred by the woman.</p>
<p>EXAMPLE 3</p>	<p>A 26 year old woman has this refractive error: R -3.50 D (6/18) L -4.00 D (6/6)</p> <p>Her right eye was damaged by a stone when she was a child and she was told she would never see well with it.</p> <p>You need to choose whether to correct the right eye or the left eye:</p> <p>→ You would probably choose to correct the left eye because even though it needs a stronger power, it has the best VA.</p> <p>→ Because the vision in her right eye is poor, she will be unaffected by the overcorrection in that eye.</p> <p>You decide to prescribe -4.00 D RMS.</p>
<p>EXAMPLE 4</p>	<p>A 45 year old man has this refractive error: R +2.00 D (6/6-) L +2.50 D (6/6-) Add +1.50</p> <p>You decide to give him two pairs of spectacles: one pair for near work and one pair for distance.</p> <ul style="list-style-type: none"> • Near spectacles: <p>You need to choose whether to correct the right eye or the left eye:</p> <ul style="list-style-type: none"> - +3.50 D RMS will fully correct his near vision for his right eye - +4.00 D RMS will fully correct his near vision for his left eye. <p>→ You would probably choose to correct the right eye because we usually correct the eye that needs the weakest power.</p> <p>You prescribe +3.50 D RMS for near work.</p>

PRESCRIBING RMS (cont.)

<p>EXAMPLE 4 (cont.)</p>	<ul style="list-style-type: none"> • Distance spectacles You need to choose whether to correct the right eye or the left eye: <ul style="list-style-type: none"> – +2.00 D RMS will fully correct his distance vision for his right eye – +2.50 D RMS will fully correct his distance vision for his left eye. → Usually you would choose to correct the right eye (the eye that needs the weakest power), BUT → This man is a presbyope so: <ul style="list-style-type: none"> - if you fully correct his left eye (with +2.50 D RMS) his right eye will be over-corrected by +0.50 D - An over-correction in his right eye is like a “mini-Add” - With a +0.50 Add the man may be able to see things that are at an intermediate distance (like people standing close to him) - This is a type of monovision. <p>You are still not sure whether to prescribe +2.00 D RMS or +2.50 D RMS so you give the man a pair of each to try on:</p> <p>→ The man tells you that he prefers his vision with the +2.50 D RMS and his eyes feel comfortable.</p> <p>You prescribe +2.50 D for distance.</p>
<p>IF REFRACTIVE ERROR IS ASTIGMATIC</p>	<ul style="list-style-type: none"> • If the person has more than –1.00 DC astigmatism, they probably cannot wear RMS and will need custom-made spectacles instead. • If the person has less than –1.00 DC astigmatism they can probably wear RMS – but their vision will not be as good as it would be if they wore custom-made spectacles. <p>To prescribe RMS for a person with astigmatism, you must use the:</p> <ul style="list-style-type: none"> • best vision sphere (BVS), or • equivalent sphere. <p>To calculate equivalent sphere use this formula:</p> <p style="text-align: center;"><i>Equivalent Sphere = Power of Sphere + ½ Power of Cylinder</i></p>
<p>EXAMPLE 5</p>	<p>You decide that RMS are suitable for a 35 year old man who has this refractive error:</p> <p style="margin-left: 40px;">R +3.25 / –0.50 x 170 (6/6)</p> <p style="margin-left: 40px;">L +3.25 / –0.75 x 10 (6/6)</p> <p>Calculating equivalent sphere for the right eye:</p> <p>Equivalent sphere = +3.25 + (½ x –0.50)</p> <p style="margin-left: 100px;">= +3.25 – 0.25</p> <p style="margin-left: 100px;">= +3.00 D sphere</p> <p>Calculating equivalent sphere for the left eye:</p> <p>Equivalent sphere = +3.25 + (½ x –0.75)</p> <p style="margin-left: 100px;">= +3.25 – 0.375</p> <p style="margin-left: 100px;">= +2.875 D → round down to less minus</p> <p style="margin-left: 100px;">= +2.75 D sphere</p> <p>You need to choose whether to correct the right eye or the left eye:</p> <p>→ You would probably choose to correct the left eye because we usually correct the eye that needs the weakest power.</p> <p>You do not have a pair of +2.75 D RMS, but you do have:</p> <p>→ +2.50 D RMS and +3.00 D RMS.</p> <p>You are still not sure whether to prescribe +2.50 D RMS or +3.00 D RMS so you give the man a pair of each to try on:</p> <p>→ The man tells you that he prefers his vision with the +3.00 D RMS and his eyes feel comfortable.</p> <p>You prescribe +3.00 D RMS.</p>

PRESCRIBING SPECTACLES

<p>INTERPUPILLARY DISTANCE (PD) AND OPTICAL CENTRES</p>	<ul style="list-style-type: none"> • Custom-made spectacles should be made so that the optical centres of the lenses are the same distance apart as the pupils of the person's eyes. • If the optical centres of the lenses are not the same distance apart as the pupils of the eyes, prism will be created in the spectacles. • If there is unwanted prism in a pair of spectacles, it can cause the person to have asthenopia or double vision. • Problems with unwanted prism are more likely to occur for lens powers greater than ± 3.00 D.
<p>READYMADE SPECTACLES AND OPTICAL CENTRES</p>	<ul style="list-style-type: none"> • The optical centres of RMS lenses are usually in the centre of each lens. (For custom-made spectacles the optical centres can be anywhere, not just in the centre.) • If the optical centres are in the middle of the lenses, you can measure the distance between the optical centres of a pair of RMS by using a rule to measure the distance between the two lenses. An easy way to do this is to position your rule as shown below: <div data-bbox="561 869 1407 1193" data-label="Image"> </div> <p>Figure 26.1: Measuring the distance between the optical centres of RMS using a rule. This pair of RMS probably has 64 mm between the optical centres of each lens.</p> <div data-bbox="469 1310 1508 1635" data-label="Complex-Block"> <div style="display: flex; align-items: center;">  <div> <p>BUT BE CAREFUL!</p> <p>Not all RMS are manufactured this way. Some RMS do not have their optical centres in the centre of each lens.</p> <p>If you want to be sure of the distance between the optical centres you must use hand neutralisation or vertometry.</p> <p>→ This is good to do if you have ordered a new type of RMS and you want to be sure that the optical centres are in the centre of the lens.</p> </div> </div> </div>
<p>CHOOSING THE BEST RMS FRAME FOR A PERSON</p>	<p>The best RMS frame for a person is a frame that is the correct size for them:</p> <ul style="list-style-type: none"> → The person's PD should be similar to the distance between the optical centres of the lenses of the RMS. → This means that the person is most likely to be looking through the optical centres of the lenses. → If the frame is too big or too small, the person may not be looking through the optical centres and may get asthenopia or double vision.

SUMMARY: PRESCRIBING READYMADE SPECTACLES

READYMADE SPECTACLES

What are Readymade Spectacles?

- Mass-produced spectacles that are not made individually to suit each person.
- Have a limited range of powers and styles.
- Right and left lenses have the same powers.
- Spherical lenses only.
- Distance between the optical centres of the lenses cannot be changed.

Advantages of RMS:

- Less expensive than custom-made spectacles.
- Easy to keep in stock and dispense at the time of the eye exam.
- Person does not have to wait for them to be made or come back to collect them.
- Correct a vast percentage of people's refractive errors.

Disadvantages of RMS:

- Usually will not perfectly correct a person's refractive error.
- If the distance between the optical centres of the lenses and the person's PD is very different the person may get asthenopia or double vision.

Ask the person to try the RMS in your clinic and decide for themselves:

- Ask if the vision is clear and if their eyes feel comfortable.
- Show the difference between the RMS and your refraction lenses in a trial frame.
- Tell the person the difference in cost.

PRESCRIBING RMS

When to Prescribe RMS:

- If the person's refraction is ± 6.00 D.
- If there is less than 1.00 D anisometropia.
- If astigmatism is less than -1.00 DC.
- If the person says that they see clearly and comfortably with the RMS.

If Refractive Error is Spherical and the Same in Both Eyes:

- Choose the exact RMS power the person needs.
- If the exact power is not available, choose a RMS power that is slightly weaker than the person needs.

If Refractive Error is Spherical and Different in Each Eye:

Think about:

- Refractive error → correct eye that needs the weakest power.
- Visual acuity → correct the "good" eye.
- Age → consider over-plussing one eye for distance to give more near vision.

SUMMARY: PRESCRIBING READYMADE SPECTACLES (cont.)

PRESCRIBING RMS (cont.)

If Refractive Error is Astigmatic:

To prescribe RMS use the:

- BVS
- or
- Equivalent sphere.

If you have trouble deciding:

- Let the person try on the two powers of RMS.
- Ask them which one they prefer.

PD AND RMS FRAME SELECTION

PD and Optical Centres:

- Spectacles should be made so the distance between the optical centres of each lens is similar to the person's PD.
- If this is not done, unwanted prism can be created which can give the person asthenopia or double vision.

RMS and Optical Centres:

- The optical centres of RMS lenses are usually in the centre of each lens.
- If so, the distance between the optical centres can be measured with a rule.
- If the optical centres of the RMS are not in the centres of the lenses, only hand neutralisation or vertometry can measure the distance between the two optical centres.

Choosing the Best RMS Frame for a person:

- The person's eyes should look through the centres of the RMS lenses.
- If the frame is too big or too small; the person may not be looking through the optical centres and may get asthenopia or double vision.

TEST YOURSELF QUESTIONS

1. Complete the following table:

ADVANTAGES OF RMS	DISADVANTAGES OF RMS

2. Usually, if the right and left eyes have different refractive errors, we choose to correct the eye that needs the weaker powered lens – but there are some exceptions:

a) When would you choose to over-correct one eye with too much plus?

Why?

b) When would you choose to over-correct one eye with too much minus?

Why?

3. A 34 year old woman has this refractive error: R +3.50D (6/6-2) L +4.25D (6/6-2)

What power of RMS would you prescribe for distance?

Why?

4. A 35 year old man has this refractive error: R -3.00D (6/6) L -2.50D (6/24)

He had an operation on his left eye a year ago, but was told that he would always see badly with his left eye. What power of RMS would you prescribe?

Why?

5. A 20 year old man has this refractive error: R -2.50D (6/6) L -1.75D (6/6)

What power of RMS would you prescribe?

Why?

6. A 25 year old woman has this refractive error: R -1.75/-0.25x40 (6/6) L -2.25/-0.75x125 (6/6)

What power of RMS would you prescribe?

Why?