



To assess accommodative function using the UC-CUBE, place the front face of the CUBE at the required distance¹ and illuminate using the on/off button on the base. Place the curved end of the ruler against the patient's chin/upper lip and encourage them to view the illuminated target. Choose a picture with appropriate detail for the patient's age/visual acuity by twisting the white part of the CUBE until the preferred picture faces the patient. As appropriate, swap the CUBE for the text version.² While the patient views the target, hold your retinoscope next to the front face of the CUBE and view the patient's retinoscopy reflex (Photo 1). If your patient is wearing their distance correction (with anisometropia & astigmatism corrected), then you need observe only one meridian of one eye. If your patient is uncorrected, then you need to consider the least hypermetropic meridian.

- If a **neutral** reflex is observed, the patient is accurately focused on the CUBE target.

- If a **'with'** movement is observed, the patient is under-accommodating (accommodative lag). To determine the size of the lag move your retinoscope away from the target, along the ruler, until neutral is observed. The patient continues to fixate the CUBE target which remains stationary (Photo 2). The distance between the front face of the CUBE (accommodative demand) and the position

of the neutral reflex (accommodative response) provides a measure of the **accommodative lag**.³

- if an **'against'** movement is observed when the retinoscope is alongside the CUBE, the patient is focused in front of the target. Move the retinoscope forward to find neutral and the dioptric distance between the front face of the target and the neutral point is the **accommodative lead**.

To help you judge if a patient's accommodative responses are 'normal' or a cause for concern, the UC-CUBE has been calibrated to show normal ranges of accommodative response to targets at two distances; 20cm and 25cm. Young children commonly work at short distances.

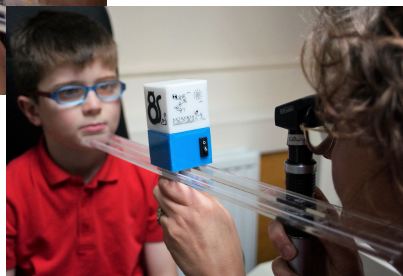
If the front face of the CUBE is set at 20cm (5D demand), the expected neutral point will lie within the **hatched white** band marked on the ruler. If the CUBE is set at 25cm (4D), the expected neutral point will lie within the **solid white** band.

We suggest practitioners set the CUBE to either 20cm or 25cm depending on the patient's age and arm length and measure accommodative response at one distance. A response that falls outside the normal range requires management.



Photo 1: place the retinoscope beside the CUBE.

Photo 2: move the retinoscope back until neutral is observed



Generally, the patient's distance refractive error is corrected during assessment of accommodative function. However, the UC-CUBE may be used to help practitioners evaluate how well an uncorrected (or under-corrected) hypermetropic patient is coping at near by assessing accommodative responses unaided (or through habitual, partial correction). The UC-CUBE can be used to decide on the appropriate amount of partial hypermetropic correction (if any), by determining the amount of plus that allows the patient to produce accommodative responses within normal limits.

¹ To allow the CUBE to glide up and down the ruler, slide the white release lever positioned under the blue base of the CUBE away from the patient. To fix the CUBE in position, slide the lever towards the patient.

² To swap the CUBE from picture to text version, simply twist the white picture CUBE off the blue base and click on the text version, taking care not to damage the internal components.

³ E.g. if the CUBE is placed with its front face at 25cm (4D accommodative demand) from the patient and neutral is observed at 50cm (2D accommodative response), the accommodative lag is 2D (4D – 2D).