on the near vision card (eg, 20/20 for the smallest line). *Jaeger notation*, also commonly used, assigns each line on the card a single arbitrary numeric value corresponding to a Snellen value. For example, Jaeger 2, abbreviated J2 when recording in the patient’s chart, is equivalent to the 20/30 Snellen distance-equivalent line on the near vision card. Other notation systems are the *point system* and the *Snellen M unit*. Ophthalmic medical assistants should follow their office policy for the preferred testing procedures and proper notation for recording the patient’s near visual acuity. Procedure 8.3 describes the general steps for performing the near acuity test. See also Video 8.4.

**Figure 8.5** The occluder and pinhole. *A.* The occluder covers the right eye so that the left can be tested. *B.* The left eye views the chart through the pinhole. (*Courtesy of Brice Critser, CRA, Department of Ophthalmology and Visual Sciences, University of Iowa.*)

**Figure 8.6** A printed card used for testing near vision at a normal reading distance of about 14 inches.

**Procedure 8.3 Performing the Near Acuity Test**

Patients who wear eyeglasses or contact lenses for distance vision should wear them for the test. If a contact lens wearer is in monovision correction, hold an appropriate plus (+) power lens (+1.25 to +2.50) in front of the eye corrected for distance. Some ophthalmologists will also want each eye tested without correction. If the patient has reading glasses, bifocals, or other reading aids, the near vision should be tested with and without the near correction (at least on the first visit); after the first visit, the near vision with reading correction is usually enough.

1. Instruct the patient to hold the test card of printed letters, words, or numbers at the distance specified on the card, usually 14 inches. If the patient’s near correction is for a distance other than 14 inches, then also test the near vision at the prescribed distance and record the distance used in the patient’s record with the result (eg, J2 at 10 inches).

2. Have the patient cover the left eye with an occluder or the palm of the hand. Alternatively, you may hold the occluder over the patient’s left eye.

3. Ask the patient to read with the right eye the line of smallest characters legible on the card.

4. Repeat the procedure with the right eye occluded.

5. Record the acuity value for each eye separately in the patient’s chart according to the notation method preferred in your office, as shown in the following examples:

\[
\text{near } \sqrt{\text{OD 20/25}} \quad \text{OD J2} \quad \text{OS 20/25} \quad \text{OS J2}
\]
Other Acuity Tests

Patients with severe low vision may not be able to see even the largest Snellen letter (usually, the 20/400 line) clearly at the standard 20-foot or equivalent distance. Repeating the distance visual acuity test at shorter distances is usually the next step in evaluating the patient's visual acuity. If this procedure is unsuccessful, the patient may be asked to count the number of fingers held by the examiner in front of the patient. Alternatively, the patient may be asked to indicate recognition of the examiner’s hand motions or to detect light from a small penlight. (Chapter 16 discusses these specialized acuity tests for visually impaired patients.)

Procedures Following Acuity Tests

If the results of testing indicate below-normal visual acuity, additional procedures may be performed to evaluate the source of the disability in an effort to help the patient achieve a visual acuity as close to normal as possible. For patients with eyeglasses or contact lenses, the first step is to determine whether the lenses the patient is wearing are providing appropriate correction for the patient's present refractive error. The optical correction of the patient's current lenses is measured by lensometry. The patient's present refractive state is then evaluated by refractometry, a group of optical tests to determine the type and amount of the patient's refractive error and the appropriate lens correction. If the prescription for the patient's existing lenses differs with the newly determined correction and the below-normal visual acuity is improved with this recent correction, a new spectacle lens prescription is warranted.

Keratometry and corneal topography are procedures for directly measuring a patient's corneal curvature. This information is useful as a measure for refractive errors and as a guide to fitting contact lenses. It may also be used for the calculation of intraocular lenses. These tests can reveal an irregular corneal surface contour, a sign of past or present corneal disease and a cause of decreased vision.

Lensometry, refractometry, and keratometry are discussed in detail in Chapter 5. Corneal topography is discussed in Chapter 10. Another test often performed at this stage of the comprehensive medical eye examination evaluates the patient’s color vision. This procedure is discussed later in this chapter.

The ability to overcome glare from objects in the visual field and to discern various degrees of contrast is an important component of overall visual function. Measurement of these abilities, called glare testing and contrast-sensitivity testing, may be indicated by the patient’s history or the results of the visual acuity examination. (Chapter 10 includes discussion of the exact purpose and principles of these tests.)

Alignment and Motility Examination

Proper alignment of the eyes and unrestricted function of the extraocular muscles are necessary for normal vision. If the eyes are misaligned or if the extraocular muscles are unable to move the eyes in a coordinated manner, the brain may not be able to merge the images received from the 2 eyes (fusion). Failure to achieve fusion produces diplopia (double vision) and in early childhood suppression (ignoring one eye’s visual input) and amblyopia (decreased vision in an eye) with a resultant loss of stereopsis (the ability to perceive depth in 3 dimensions). While adult patients with ocular misalignment readily recognize their diplopia and seek medical help, children with suppression and amblyopia may be totally unaware of their dependency on the vision of 1 eye and may be ignorant of their loss of stereopsis. For these and other reasons, evaluation of the alignment of the eyes and their motility, the proper movement of the extraocular muscles, is an important component of the comprehensive eye examination.

In an ocular alignment and motility examination, patients are observed and tested for three principal properties of the visual system: eye movement (motility), eye alignment, and fusional ability. Because these functions are physiologically complex, the methods used to test them are varied and at first glance complicated. Testing usually begins with a gross assessment of ocular motility, followed by additional tests if this screening evaluation indicates the presence of a potential alignment or motility problem.

For the initial, gross evaluation of ocular motility, the examiner holds a small object or displays a finger within the patient’s central field of vision and asks the patient to hold the head still and to follow the object’s movement with his or her eyes in the 6 cardinal positions of gaze (Figure 8.7):

1. right and up
2. right
3. right and down
4. left and up
5. left
6. left and down