Modified Snellen Chart For Vision Screening

By CAROLINE AUSTIN, M.S.

IN MICHIGAN for many years, the most commonly used vision screening methods have been the standard Snellen symbol "E" chart and the Massachusetts vision test. Both of these methods require extensive training for the screener and in some places, because of this, there was little or no screening going on. Even the standard Snellen chart, simple as it seems to a trained eye technician, was rejected by many teachers as being too complex. It had been the feeling of the Michigan Department of Health that by providing the classroom teachers with a relatively simple, quick, and easily employed device for screening, it would be possible to find numerous children with serious eye problems who were being missed.

In an attempt to extend screening into these places where little or no screening was going on, the vision unit of the Michigan Department of Health's maternal and child health section prepared a modified symbol "E" chart based on the standard Snellen chart. The modified chart, which was first put into use in April 1952, used only the 20/30 and 20/20 symbols, placed on the new chart in 2 sections, each consisting of 2 lines of 6 symbol "E's."

The State health department did not expect the simplified chart to supplant more adequate screening methods, nor has it done so. After 2 years' experience with the new chart, the department believes that it serves the purpose for which it was intended.

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Several years of study and experimentation preceded the actual preparation of the modified chart for general distribution. Physicians were interviewed individually and in groups to obtain their reactions to simplifying the method of using the Snellen "E" symbols. Much time and effort went into working with teachers to find their problems in using the regular Snellen test in order to overcome as many objections as possible.

The State health department determined to produce a chart that would reduce to a minimum the technical knowledge required to administer a vision screening test and the time required to give the test as well as eliminate the possibility that students might memorize the location of the symbols.

These requirements were met by producing a simple "pass-fail" screening on the 20/30 symbols and by designing the chart so that it can be hung in 4 different positions. Holes are provided for this purpose. This gives the administrators of the test 16 combinations of 6 "E" symbols from which to select at random the 3 combinations of 6 symbols needed to screen each individual's eyes, both independently and together. In giving the test no attempt is made to measure actual visual acuity.

The Michigan Department of Health is in constant touch with ophthalmologists in the State. Recommended vision screening standards are reviewed regularly by the ophthalmological committee of the Michigan Medical Society with the vision unit of the department's maternal and child health section.

The standards in the modified symbol chart were developed to conform with the ophthalmological committee's recommendations that the ability to read the 20/30 symbols with each eye independently and with both eyes together is adequate distance vision for school tasks. The ophthalmologists were aware that some children in the "20/30 or better" group have eye problems needing treatment; however, the committee advised that they not be referred to doctors since most of the children in this group do not need treatment.

It was the committee's thought that harm can be done to a screening program by referring to doctors too many children who do not require treatment. When such practice becomes common, valid referrals are too often ignored by parents. It is wiser to miss a few children, they believe, than to lose parental respect for the screening method.

The chart was also constructed so as to permit 20/20 screening if doctors desire at any time to raise referral standards for a given area or school grade. The two lines of 20/20 symbols included in the modified symbol chart also make it possible to screen for hyperopia (farsightedness). Many local health administrators had requested a test for screening for hyperopia, and acceptable standards for a referral to doctors of children with this defect had been developed when the Massachusetts vision test was first introduced in Michigan. Standards which had been accepted and which are in present use specify a +1.75-diopters correction for use until a child is 9 years old and a +1.5-diopters correction for children age 9 and over. These specifications may be changed at any time.

The new chart was sent to the National Society for the Prevention of Blindness for verification of letter size and conformity to standards for shape and contrast. With the natural aging and soiling of paper, it is difficult to produce a paper chart on which the print contrast will remain constant. This problem is somewhat reduced by asking teachers to obtain fresh charts each year and to replace them as often as necessary when they become soiled. In this way, the department attempts to prevent the charts from deteriorating to the point that they become unreliable.

Use of the Chart

Directions for use of the chart are included with every chart distributed. The directions explain procedures for screening as simply and briefly as possible in order to reduce to a minimum the unreliability of test results produced by directions which may be either incomplete or too technical (see p. 670). They also give specifications for providing standard lighting by using two gooseneck lamps, as recommended by the National Society for the Prevention of Blindness and accepted by Michigan doctors.

No attempt has been made to replace more adequate screening methods, nor has the chart been given a great deal of publicity. Since the new chart was published, the Massachusetts vision test has continued in use in the places where it had been introduced, and it has since been adopted in many additional communities. The number of requests for the regular Snellen chart each year is increasing, and the health department has continued to print and distribute it. Requests for the new chart outnumber requests for the standard Snellen chart by 6 to 1 and have continued in that ratio since it was first introduced.

The department feels that the success of the new chart in meeting the need for obtaining more vision screening for more children is indicated by the 6 : 1 ratio along with the steady increase in the use of the other screening methods. This and the enthusiastic comments received from doctors, nurses, and teachers have convinced the department of the value of continuing to provide the modified Snellen chart for those who wish to use it.

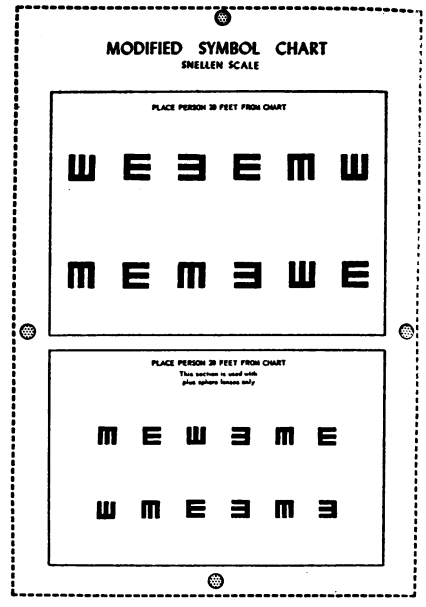
The department tries to assist parents, nurses, and teachers to understand the limitations as well as the potentialities of the screening method which they use. The vision unit, working with and through local health departments and schools, attempts to carry on an extensive educational program in order to counteract, in some measure, the effect of underreferral by improving observation and recognition of symptoms of eye difficulty.

The department feels that in all vision screening it is wise to work closely with doctors in determining acceptable methods and referral standards. Even within a small area, recommendations may vary. The department recommends that before beginning a screening program, referral standards be reviewed whenever possible by local doctors for their acceptance or their recommendations and that these referral standards be reviewed periodically to determine their continued acceptability.

Screening Directions for the Modified Symbol Chart

The modified symbol "E" chart provides a quick yet relatively accurate means of screening for visual acuity at 20 feet. This is a screening and is in no way an eye test or examination. Hang the chart on a light-colored wall surface at eye height for the person being screened. Hang it so that no direct source of light or reflected glare is within the field of vision as the child looks toward the chart from 20 feet away. Do not screen in direct sunlight or on dark, cloudy days unless you have standard lighting which may be obtained by using 2 gooseneck lamps, each having a 40-watt bulb. Measure and mark the 20-foot distance carefully. The child's eyes should be exactly 20 feet from the chart. He may sit or stand.

If children are unfamiliar with this screening method, prepare them in groups by discussing the "E" and the directions toward which the legs point. The word "test" should not be used. Ask children to tell you, instead of pointing with their fingers, which way the legs of the "E" ("table" for the very young) go. Equipment will include the following: the chart; 2 gooseneck lamps; clean eye cover of black paper for each child; white window card to isolate each symbol on the chart; measuring tape.



Screening for Low Visual Acuity (Large Symbols)

With the child at the 20-foot mark directly in front of the chart, have him tell which way the legs point, looking first with both eyes, then with the right, and then the left. As he reads with one eye, cover the other by placing a clean black paper square diagonally across the bridge of his nose, being careful not to push on the eye itself, which should be kept open. Have the helper at the chart expose 1 symbol at a time, going straight through a group of 6 from right to left, left to right, or up, or down. Rehang the chart frequently and vary directions to avoid memorization. If the child wears glasses all of the time, test with glasses only. If glasses are worn for reading only, test without glasses. Encourage the child to do his best to read the symbols, but avoid strain. Observe his behavior during the test and record signs of strain, such as forward thrusting of the head, eyes filling with tears, excessive blinking, frowning, scowling, and so forth.

Record the number of correct responses with both eyes together, right eye, and left eye, as "Tom Jones 5–5–3." Recheck in about a week those having any score of 3 or under. Correlate all findings, including visual screening results plus observation of behavior in the classroom, general health, and eye conditions. Refer to the public health nurse or parents all children who consistently present any indications of visual disturbance and all children who, on rechecking, continue to have scores of 3 or under with both eyes together or with either eye alone. These children should have a thorough examination by a competent eye doctor.

Screening for Farsightedness (Small Symbols)

Additional equipment is needed for giving this part of the test. Two pairs of glasses, fitting the following specifications, may usually be obtained at any good optical shop—for use with children ages 5 to 8: grinding, plus 1.75 diopters; frame size, 4½ inches; for use with children ages 9 and over: grinding, plus 1.5 diopters; frame size, 5 inches.

Advise the child that you have glasses that some boys and girls can see through and others cannot. You would like to know if he can see through them. Have him put on the pair advised for his particular age and close his eyes. After about 30 seconds, have him open his eyes and follow the same procedure as was used in the previous screening, counting the correct responses. Record the number of correct responses with both eyes together, and with each eye individually. Rescreen in about a week those having any scores of 4 or more. Those having a score of 4 or more on the recheck should be referred to a competent eye doctor.