Tips for Appropriate Eye Chart Design

The design of the eye chart you use can significantly affect the visual acuity you receive (Bailey, 2012). Research supports single, LEA SYMBOLS® optotypes surrounded with bars for preschool-aged children (Vision in Preschoolers (VIP) Study Group, 2009). If you are required to use standard eye charts, however, national and international guidelines dictate how charts should be designed (Committee on Vision, 1980; International Council of Ophthalmology, 1984; World Health Organization, 2003; & American National Standards Institute, Inc., 2010).

The 6 guidelines are:
1. Optotypes should be of approximate equal legibility. “Optotype” is the name for the picture, symbol, letter, or number the child is to identify. Approximate equal legibility helps to prevent guessing.

2. Each line on an eye chart should have the same number of optotypes. Some 11 x 14 charts may have fewer than 5 optotypes on the top two lines to fit a light box. This is acceptable; you are concerned with lines 20/50 and below.

3. Horizontal spacing between optotypes should be equal to the width of the optotypes on a line (red box).

4. Vertical spacing between lines should be the height of the optotypes in the next line down (blue box).

5. The size of optotypes should progress down the chart by 0.1 log units between rows (Figures 1 and 2). You should see 20/32 instead of 20/30. Typically these charts are referred to as “proportionally spaced” in a catalog description.

6. Optotypes should be black on a white background with luminance between 80 cd/m2 and 160 cd/m2 – or 34.4 lux and 68.9 lux.
A line drawn outside the optotypes on an appropriate design would resemble an inverted pyramid instead of a rectangle.

Additional tips include:
- Unless the chart is calibrated for 5 feet, charts for individuals from age 3 years through adulthood will be 10 feet from the chart to the individual’s eyes, not 20 feet.
- You will see 20/32 instead of 20/30.
References:


