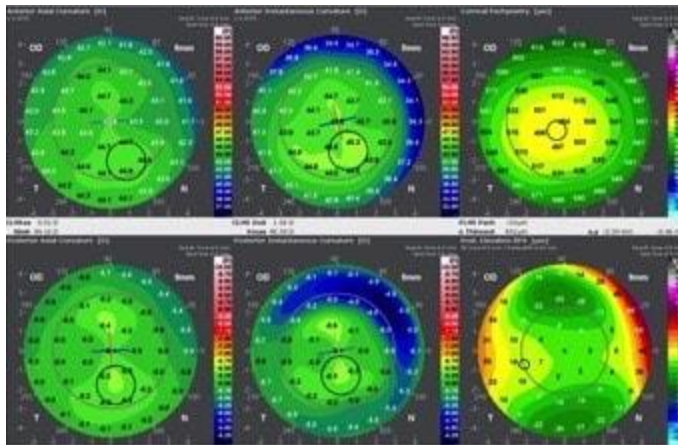


The acronym CLMI.X stands for **Cone Location and Magnitude Index**, and we actually started out developing it for the anterior surface only, so it was CLMI.X.

And then what we did because the **Galilei** actually has pachymetry and posterior surface data available as well as anterior surface data was develop CLMI.X.

The idea of the original CLMI was to look for anterior surface curvature asymmetry, which is a hallmark of keratoconus. And other hallmarks of keratoconus are asymmetry in the pachymetry map, or the thickness profile map, as well as asymmetry in the posterior surface. The idea was to combine a very similar analysis of all three surfaces, giving us CLMI.X.



Diagnosing Keratoconus with CLMI.X

The way that it works, essentially, as opposed to looking for the single point curvature maximum, which is subject to lots of error in keratoconus, is that the algorithm actually looks for a 2-millimeter circle region of steepest curvature on the whole map. That was the concept behind CLMI.X.

When we moved to CLMI.X, we extended that to the posterior surface not to just look for the steepest region but also the highest region on the elevation map. So, we take into account the anterior surface steepest curvature area, the anterior surface highest elevation area, the posterior surface steepest curvature area, and the posterior surface highest elevation area, as well as the minimum pachymetry.

Detecting Astigmatism

The other two quantities, curvature and elevation, look for maxima. With the pachymetry, we look for the minimum. And then we look for asymmetry by taking that steepest area on one side

of the cornea and comparing it to 180 degrees away, because astigmatism would have a steep area on both sides.

Asymmetry in Keratoconus

But if we're looking for keratoconus, we want an isolated steep area, so we compare it to a region exactly 180 degrees away and look for the asymmetry in those two regions.

For elevation, we look at a region 180-degrees away and look for asymmetry in the elevation above the best fit sphere. For pachymetry, we find the thinnest area and look for asymmetry again 180 degrees away in the thickness of the cornea.

So, we combine them all into this one index that we call CLMIX — Cone Location Magnitude Index Extended.