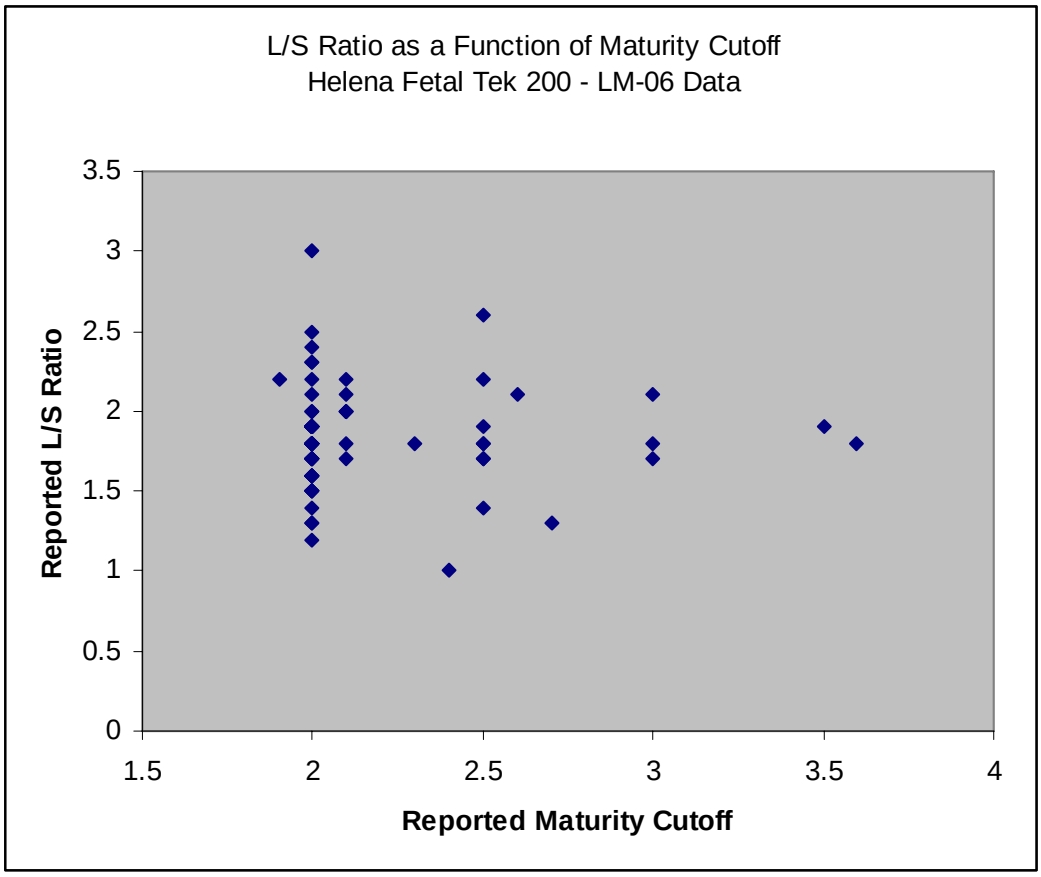
Fetal Lung Maturity Interpretation Provides a Basis for Assessing L/S Ratio Proficiency

The lecithin / sphingomyelin (L/S) continues to serve as an important method of assessing fetal lung maturity (FLM). However, the value of proficiency testing for L/S measurement has been compromised due to the dwindling number of laboratories performing these tests. Aggravating this trend are variations in interpretative cutoffs, and the splitting of peer groups along methodological differences that may or may not influence clinical performance. In an effort to better serve the community, this survey has piloted a study of the interpretation of FLM as an alternative, more clinically relevant method for assess proficiency. The initial results are promising.

Reviewing first the results from the Helena Fetal Tek 200 peer group, we find that despite a common method, the cutoffs for interpreting FLM vary almost two-fold (1.9-3.6 for maturity). Surprisingly, there seems to be no correlation between the reported cutoff, and the measured value on any of the three challenges (see figure below). Fortunately, there was great consistency on two of the three challenges: 50 out of 52 interpreted LM-04 as immature, and 52 out of 52 interpreted LM-05 as mature. There was no consensus on LM-06: 8 mature, 28 indeterminate, and 16 immature. Looking more closely at the data, we see that one of the two "failures" in LM-04 was actually caused by an interpretation inconsistent with the lab's reported cutoff. This problem was more prevalent in LM-06, where several interpretations were inconsistent with the labs' reported cutoffs for indeterminate or mature results. As misinterpretation is likely to have clinical consequences, such lapses should be taken seriously.



In reviewing the in-house L/S methods we, of course, see greater variation in methods, and an even larger spread in cutoffs: (1.9-4.1 for maturity). Once again, there was no apparent correlation between cutoffs and the actual measurements for any of the challenges. However, the interpretations were again quite consistent for LM-04 (38 immature and 2 indeterminate) and LM-05 (38 mature and 2 indeterminate), while no consensus was achieved for LM-06 (8 mature, 14 indeterminate, and 17 immature).

Some may point to the lack of consensus on LM-06 as the obvious limitation of grading interpretations: we may only achieve consensus on extremely mature or immature specimens. But even this can identify some operational errors in the laboratory, such as the inconsistent interpretations noted.

The results of this pilot may also prompt labs to investigate their cutoffs. If your lab's results agree numerically with most other labs, your cutoffs should not differ dramatically.

Darryl E. Palmer-Toy, MD, PhD
Chemistry Resource Committee