



## Reliability of PQF Fetal Monitoring Credentialing (FMC) Exam

### Executive Summary

The Perinatal Quality Foundation agrees that credentialing is a rigorous procedure. Our Fetal Monitoring Credentialing (FMC) exam was created by a panel of nationally recognized medical and nursing experts and pre-tested thoroughly on beta populations. Questions were selected based on their medical relevance, item variances, correlations with all other question scores, and the impact of each question on the exam's overall reliability as measured by Cronbach's Alpha analysis. In addition reliability criteria for multi-dimensional exams were assessed using overall Omega and Armor's Theta analysis. All reliability measures, including Alpha, will be recalculated with more data as the exam is administered over time.

### Background

In the literature, Cronbach's Alpha is the most frequently cited measure of reliability (or "reliability coefficient"). Although Alpha is cited most frequently, the literature is also filled with cautions of how Alpha is often mis-used or mis-interpreted. The most common caution is that Alpha reflects reliability of a test to measure only **one underlying concept**. When an exam covers two or more areas--as when robust knowledge is required for credentialing--then alternative measures of reliability must be considered. Other key considerations may impact Cronbach Alpha results.

- **Separate Alpha computations** for each the Knowledge Test (KT) and Judgment Test (SCT) contribute to lower Alpha values by decreasing the number of questions. **Alpha increases with the number of questions**, all else equal.
- Alpha measures a test's reliability for measuring **one key concept**. The PQF exams are **robust** in measuring a **number of concepts**.
- **Alternative reliability measures** have higher values. These alternatives are **appropriate** when **more than one concept** is measured.

Additional reliability measures were used to assess reliability of the PQF Credentialing Exam. In short:

- [Cronbach's] **Alpha** measures the reliability of a test when the test measures one underlying concept
- [Armor's] **Theta** measures the reliability of a test, based on the concentration of question scores in unique, data-driven factors
- [McDonald's Overall] **Omega** measures the reliability of a test, based on how well the question scores conform to a hypothesized number of underlying, unobservable factors
- [Ordinal] **Alpha**, which is more recently introduced in the literature, offsets Alpha's shortcomings when question scores are Likert Scales<sup>1</sup>

### PQF Results

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## Perinatal Quality Foundation

*Improving the Quality of Maternal Fetal Medicine Medical Services...*

The Perinatal Quality Foundation has assessed the Cronbach Alpha, the Theta, and the Omega for all examinations provided as part of the Fetal Monitoring Credentialing program. The statistical tests indicate that the FMC examinations have acceptable reliability.