Understanding CAT and CBT for the NREMT-EMT National Certification Cognitive Examination

In January 1, 2007 the National Registry of EMTs changed its EMT national certification cognitive examination method to computer based testing (CBT). The NREMT-EMT certification examination is no longer administered by traditional “paper and pencil.” The CBT is administered at a computer work station in a Pearson Vue test center.

The CBT used by the NREMT is called computer adaptive testing (CAT). Each examination is specifically tailored to the individual Paramedic candidate. This testing method is considered state of the art and uses item response theory (IRT). IRT is a statistical way to measure a candidate's ability utilizing the probability of correctly answering an item. This is directly related to the difficulty level of the item. Combining CAT with IRT ensures the NREMT-EMT examination is precise, fair and accurate.

The CAT examination delivers each item on the same capability scale as the candidate’s proficiency. Initial items on the CBT are usually “just below” the passing standard. If an item is delivered below the candidate’s level of ability, the probability is high for the candidate to answer the item correctly. If an item is delivered above the candidate's level of ability, the probability is high for the candidate to answer the item incorrectly. If the candidate answers an item correctly, then a slightly more difficult item will be delivered.* As the difficulty level of items increases, the candidate will eventually begin to answer items incorrectly. The difficulty level of items become slightly lower as the candidate begins to answer items correctly.

At this point, the CBT’s application algorithm calculates an “ability estimate” of the candidate. Items are then delivered that are slightly more difficult or less difficult based on the candidate’s proficiency for answering items correctly. As the CBT progresses, the “ability estimate” becomes more precise as the pattern of correct-to-incorrect responses stabilizes around the candidate’s true ability. The CBT will end at a point there is 95% certainty the candidate's true ability is measured above or below the passing standard.

*The NREMT performs psychometriculation of all CBT items to establish level of difficulty.