

# Choosing the Right BreathTracker

The correct choice of BreathTracker for a laboratory or office should be made on the basis of the individual facility. Considerations should include the kind of practice engaged in by the physicians and the expected number of patients which will need breath-tests. The CLIA regulations have exempted breath-testing from their certification for now (since 1996), so the test can be done in a laboratory or office not certified by the HHS. Additional information on the BreathTrackers is located in the “[BreathTracker Comparison](#)” section.

## SELECTING AND INSTRUMENT FOR H<sub>2</sub> ANALYSIS ONLY

If the customer selects an instrument only for the measurement of H<sub>2</sub> (usually based on an expected low workload or for a specific research application), a choice can be made between the BreathTracker H2 or BreathTracker H2+ (Plus). These less expensive BreathTrackers will detect hydrogen (H<sub>2</sub>) as well as the other QuinTron analyzers, but they will allow a small percentage of lactose malabsorbers to avoid detection due to conversion of H<sub>2</sub> to Methane (CH<sub>4</sub>). This principle is not limited to only QuinTron instrumentation; all other manufacturer analyzers which are limited to only H<sub>2</sub> analysis also have this limitation.

The main difference between the BreathTracker H2 and H2+ model is the additional CO<sub>2</sub> sensor installed into the BreathTracker H2+. The BreathTracker H2 and H2+ models were designed as clinical instruments and are recommended only if cost is the determining factor. The BreathTracker H2 can be as accurate and reliable as the other instruments if attention is paid to its analytical technique, and if it is operated properly.

## WHY CH<sub>4</sub> ANALYSIS SHOULD BE INCLUDED IN THE TEST

Two models are available for the measurement of H<sub>2</sub> and CH<sub>4</sub>; the BreathTracker DP and BreathTracker SC.

As described earlier above, some malabsorbers who have negative H<sub>2</sub> breath-tests may generate CH<sub>4</sub> instead. These patients will be recognized if CH<sub>4</sub> is measured as part of the routine test. If the malabsorber generates neither H<sub>2</sub> nor CH<sub>4</sub> following ingestion of a nonabsorbed sugar, the patient must be a “non-producer”, either as a result of having a sterile gut or of having rapid-transit diarrhea and/or a hostile pH (acidity too severe for the existence of hydrogen-producing bacteria).

There is overwhelming evidence in field-literature that most patients who fail to produce significant increases in H<sub>2</sub> after the administration of lactulose excrete increased levels of CH<sub>4</sub>. In one study a linear relationship was found between the amount of a disaccharide mixture ingested and H<sub>2</sub> produced over a 10-hour period. If CH<sub>4</sub> was formed, the sum of both gases followed a linear dose-effect relationship, indicating an interaction between the two components. Others have demonstrated an effect of CH<sub>4</sub>-production on fasting H<sub>2</sub> baseline values, breath-H<sub>2</sub> area under the curve following lactulose and orocecal transit time, suggesting that knowledge of CH<sub>4</sub> status is necessary for the proper interpretation of the H<sub>2</sub> breath-test.

The BreathTracker DP has the same H<sub>2</sub> analysis specifications and features as the BreathTracker H2 and H2+ models, with the additional feature of detecting CH<sub>4</sub> in the same alveolar air sample.

The BreathTracker SC, analyzer of choice for breath trace-gas studies, measures H<sub>2</sub> and CH<sub>4</sub>, and uses carbon dioxide (CO<sub>2</sub>) to correct for any dilution of the alveolar sample by dead space air or sampling error.

## WHY CO<sub>2</sub> MEASUREMENTS SHOULD BE UTILIZED

The BreathTracker SC and H2+ models have a unique feature for detecting and correcting samples for contamination with room air or dead space air during the collection procedure. Such contaminations result from improper sample collection, in which some of the respiratory dead space air is captured with the sample, or the technician inadvertently contaminates the sample with room air during handling. These two BreathTracker models measure the CO<sub>2</sub> in the sample, then compare it with what the alveolar CO<sub>2</sub> should be, then corrects each samples H<sub>2</sub> and/or CH<sub>4</sub> values for the contamination.