

Bedfont Scientific Ltd – Scientific contributions to health.

CASE STUDY

GastroCH₄ECK™ Gastrolyzer®

Helping Detect Gastro-Intestinal Disorders



About Bedfont Scientific

- www.bedfont.com
- Breath and gas analysis equipment
- Nearly 40 years of innovation
- A wide range of products with different applications

Goals

- To improve the awareness of breath testing and analysis
- Bring originally expensive testing equipment to primary and secondary public and private health services
- Provide comprehensive information and guidance for the use of breath testing equipment

Approach

- Completing clinical studies and trials with products to show efficacy
- Creating case studies with products to provide financial data
- Build brand and product awareness for both potential patients and customers

Results

- More common wide spread use of breath testing
- Provide simple, easy, patient friendly non-invasive tests
- Real time test results for quick treatment

The Gastro⁺, the first member of the Gastrolyzer® family is a handheld, fully portable, battery powered monitor, which measures the amount of hydrogen exhaled on a patient's breath, which is excellent at aiding the diagnosis of gastro-intestinal disorders ⁽¹⁾. The issue with this is that nearly 35% of the population produce methane ⁽²⁾, instead of hydrogen. The challenge was to produce a monitor that can detect and measure both hydrogen and methane exhaled on a patient's breath. The opportunity was to develop this new monitor to cater for everyone and to make it easier for doctors to diagnose gastro-intestinal diseases, making this a more far reaching product.



The Client

The Functional Gut Clinic, London, sees nearly 500 patients each year for hydrogen breath testing using the Gastro⁺. The Clinic receives many referrals each week for patients suffering from gastrointestinal symptoms of bloating, abdominal distension and altered bowel habit, which are extremely common in patients with functional gut disorders. These patients have often been in the healthcare system for a considerable time, have had numerous invasive investigations, tried several empirical treatments or exclusion diets and are generally quite fed up by the time they are seen by the Clinic ⁽³⁾.

Dr Anthony Hobson, the Clinical Director of the Functional Gut Clinic, explains, 'We view breath testing as a 'provocation' technique which not only tells us about the microbiota but also helps us to reproduce patient's symptoms tying together the clinical and physiological aspects of testing. This gives us confidence that the data that we are acquiring is clinically

important and helps guide physicians in evidence based treatment strategies' ⁽³⁾.

They investigate the cause of the symptoms using the aid of the Gastro⁺ and it worked well for most patients but Dr Hobson noticed that for a considerable about of patients the monitor did not give a reading of hydrogen, even a healthy, normal gut produces hydrogen and from the symptoms described by the patients and the professional judgement from the doctors they would have expected to see quite a high reading of hydrogen ⁽¹⁾.

Then through research Dr Hobson found papers from as far back as 1970 which had found that up to 35% of the population ⁽²⁾, in healthy adult guts, produced methane instead of hydrogen. This explained why even when the patients were presenting symptoms they were not producing hydrogen because they were probably producing large amounts of methane instead ⁽⁵⁾.



Bedfont's Response

The response to the problem was to create a new monitor that was adapted from the Gastro⁺ to become the GastroCH₄ECK, which is a larger, desk top monitor that measures accurate and real-time combined CH₄, H₂ and O₂ exhaled on a patient's breath ⁽⁶⁾. This monitor has two testing options, direct mouthpiece and breath bag sample which with the breath bags provides the option for the patient to do the test at home (the sample can last for up to 3 weeks in the bag). The mouthpieces have an in built moisture removal and infection control filter and can be used by that patient for the duration of the test, after which they need to be discarded. The GastroCH₄ECK™ requires monthly calibration and the kit is sufficient for approx. 28 calibrations. There is very little difference between the price of the mouthpiece or breath bags, cost per patient with the mouthpieces is £3.18 and cost per patient with the breath bag is £3.40.

Clinical papers have reported that there are up to 35% ⁽²⁾ of people who are non-hydrogen producers, but produce methane instead and a test using the GastroCH₄ECK™ will pick up on this proportion of people as it will measure both gases. The GastroCH₄ECK™ also measures O₂ which is used to correct any samples that may have been contaminated with the ambient air to ensure accurate readings every time and there is also a traffic light display on the screen to show a good sample from a bad one, thus saving time and money on having to repeat the test. A face mask can also be used on the breath bags for use with adults, paediatric and neonates.

This new and unique monitor is relatively low cost, non-invasive for patients and has a rapid response time that provides real-time results ⁽⁶⁾. This monitor is intended for multi-patient use by healthcare professionals in a clinical environment. Dr Anthony Hobson commends the new monitor commenting, 'The GastroCH₄ECK™ monitor provided a robust unit which allowed us to expand our service and add important clinical information about methanogenic bacteria and as such fulfilled our clinical and service needs' ⁽³⁾.

The benefits for the customers include, the GastroCH₄ECK™ is an economical monitor and method of breath analysis ⁽⁶⁾. The cost per patients is relatively low, about £4 per test, this allows for broad reach and high volume of patient testing. The GastroCH₄ECK™ creates income generation. Due to reimbursement tariffs, after an average of 20 tests per month (Private) or 29 (NHS) over a 12 month period the monitor will pay for itself and then any test after that will be profit. This makes it a well suited monitor to a healthcare environment.

The Solution

In the words of Dr Hobson, 'If you are serious about providing a Gold Standard breath testing service, the Bedfont GastroCH₄ECK™ system is essential, as without methane monitoring you will be missing very important clinical information and increase your percentage of false negative tests. It is also very important to map patients symptoms prior to and during the test to make sure the clinical translation of the physiological findings are maximised' ⁽³⁾.

References:

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