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BAXTER SUPPORTS NEW STUDY SHOWING NUTRITIONAL NEEDS IN CRITICALLY ILL COVID-19 PATIENTS AND PUBLISHED PRACTICAL GUIDELINES FOR CARE

- *Study is first to demonstrate importance of using indirect calorimetry (IC) to measure variable and dynamic energy needs of COVID-19 patients in the intensive care unit*
- *Data gathered from Q-NRG+ metabolic monitor device shows variance in resting energy expenditure (REE) measurements in comparison to frequently utilized common predictive equations, impacting likelihood of over- and under-feeding*
- *Practical guidance available to promote safety of healthcare providers when conducting indirect calorimetry on COVID-19 patients*

DEERFIELD, Ill., OCTOBER 14, 2020 – Baxter International Inc. (NYSE:BAX), a global leader in nutrition therapy, supports interim findings of an ongoing prospective study, “[Persistent Hypermetabolism and Longitudinal Energy Expenditure in Critically Ill Patients with COVID-19 \(LEEP-COVID\)](#),” demonstrating the role of indirect calorimetry (IC) in improving the accuracy of measuring COVID-19 patients’ nutritional needs during their intensive care unit (ICU) stay. The study, supported by Baxter through an investigator-initiated grant and recently published in *Critical Care*, is the first analysis of longitudinal resting energy expenditure (REE) in critically ill, mechanically ventilated COVID-19 patients. The interim findings of 22 U.S. patients assessed over 21 days suggest that predictive equations, which are commonly used to estimate patients’ nutritional needs, are largely inaccurate for this patient population. The authors observed progressive hypermetabolism and considerable variation in REE over the course of patients’ stay in the ICU, suggesting that reliance on predictive equations could lead to under-feeding of COVID-19 patients, particularly later in their ICU stay. This is notable because little is known about the nutritional needs of critically ill COVID-19 patients, and because past studies of ICU patients have associated over- and under-feeding with poor outcomes, including mortality¹.

“To deliver safe, individualized nutrition, clinicians need insight on how a patient’s metabolism dynamically changes over the course of their hospital stay,” said Jorge Vasseur, general manager, Baxter’s Clinical Nutrition business. “While much remains unknown about COVID-19 patients, we are encouraged that this first-of-its-kind study is able to shed light on the role that novel **Q-NRG+** indirect calorimetry technology can play in delivering personalized nutrition care to this population.”

During the study, which was supported by Baxter through an investigator-initiated grant, energy needs were measured by indirect calorimetry (mREE) every third day and were compared to predicted energy needs according to the Harris-Benedict equation (HBE). Hypermetabolism and wider variability in mREE were observed after the first week in the ICU. The observed hypermetabolism persisted and mREE increased during the third ICU week with an average mREE of 150 percent of that predicted. In some cases, REE was as high as two times greater than that predicted by HBE, which significantly underpredicted REE after the first ICU week. The study’s findings align with previously published literature^{1,2} on the importance of measuring patients’ nutritional needs and tailoring nutrition therapy over the course of a patient’s hospitalization, as REE changes during this time.

“Objective data is critical to guiding nutrition delivery and preventing harmful over- and under-feeding, and this study shows it is difficult to accurately predict energy needs of COVID-19 patients in the ICU,” noted the study’s author, Paul E. Wischmeyer, M.D, EDIC, FASPEN, FCCM at the Duke University School of Medicine. “Just as clinicians would never deliver vasopressors without measuring a patient’s blood pressure, we need to hold nutrition care to this same objective standard, which is now possible with accurate and simple indirect calorimetry devices.”

In partnership with COSMED SRL, Baxter introduced **Q-NRG+**, [a metabolic monitor device utilizing indirect calorimetry \(IC\) technology](#), in the U.S. earlier this year. **Q-NRG+** was previously available in several additional markets in 2019. IC is considered the "gold standard"³ when assessing a patient’s calorie needs, or REE. These readings can help inform prescription and administration of nutrition therapy, which may include parenteral nutrition (PN), the intravenous administration of nutrients.

Guidelines for Indirect Calorimetry During COVID-19

COVID-19 has challenged how hospitals provide care across many facets of the patient experience, and those challenges extend to safe use of indirect calorimetry. The recent publication, [“Practical guidance for the use of indirect calorimetry during COVID 19 pandemic,”](#) offers direction to protect the safety of healthcare providers and the COVID-19 patients they support. In addition, the manufacturer of **Q-NRG+**, COSMED, has compiled information explaining how the device is designed to minimize the risk of infections due to contaminated components, including use of disposable filters, along with instructions for properly cleaning and disinfecting reusable parts. The importance of indirect calorimetry in this population when it can be performed safely is highlighted by the LEEP-COVID study, and is an approach also supported by the European Society for Clinical Nutrition and Metabolism (ESPEN) for ICU patients.

About Baxter’s Clinical Nutrition Portfolio

In addition to providing many essential ingredients necessary to create well-balanced formulations of a clinical nutrition regimen, Baxter offers innovative and accessible products and services designed to be used in different healthcare environments, including in the ICU and the hospital, nursing homes, clinics and in homes.

About Baxter

Every day, millions of patients and caregivers rely on Baxter’s leading portfolio of critical care, nutrition, renal, hospital and surgical products. For more than 85 years, we’ve been operating at the critical intersection where innovations that save and sustain lives meet the healthcare providers that make it happen. With products, technologies and therapies available in more than 100 countries, Baxter’s employees worldwide are now building upon the company’s rich heritage of medical breakthroughs to advance the next generation of transformative healthcare innovations. To learn more, visit www.baxter.com and follow us on [Twitter](#), [LinkedIn](#) and [Facebook](#).

About COSMED

COSMED, established in 1980, is a privately-owned company that designs and manufactures cardio pulmonary and metabolic diagnostic equipment. COSMED solutions address needs of the healthcare, academic and industry markets to assess human metabolism, exercise physiology, pulmonary function and body composition for clinical and research purposes. COSMED products include a full range of spirometers, indirect calorimetry, cardio pulmonary exercise testing and body composition systems including software. COSMED headquarters are located in Rome, Italy with direct operations in Australia, France, Germany, Hong Kong, Netherlands, Switzerland, UK and United States, and a network of business partners covering more than 80 countries. Visit www.cosmed.com to know more about COSMED.

Indications for Use

The **Q-NRG+** portable metabolic monitors are indicated for the measurement of resting energy expenditure (REE) for spontaneously breathing and ventilated patients, within the following populations:

- Spontaneously breathing subjects weighing more than 15 kilograms (33 pounds) when using a canopy.
- Spontaneously breathing subjects more than 6 years old and weighing more than 10 kilograms (22 pounds) when using a face mask.
- Ventilated subjects more than 10 years old and weighing more than 10 kilograms (22 pounds).

Rx Only. The **Q-NRG+** portable metabolic monitors are intended to be used in professional healthcare facilities only. For safe and proper use of the devices mentioned herein, refer to the complete instructions in the Operator's Manual.

*This release includes forward-looking statements concerning **Q-NRG+**, including potential benefits associated with its use. The statements are based on assumptions about many important factors, including the following, which could cause actual results to differ materially from those in the forward-looking statements: satisfaction of regulatory and other requirements; actions of regulatory bodies and other governmental authorities; product quality, manufacturing or supply, or patient safety issues; changes in law and regulations; and other risks identified in Baxter's most recent filing on Form 10-K and other SEC filings, all of which are available on Baxter's website. Baxter does not undertake to update its forward-looking statements.*

Baxter is a trademark of Baxter International Inc. **Q-NRG+** is a trademark of COSMED.

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¹ Zusman et al. Resting energy expenditure, calorie and protein consumption in critically ill patients: a retrospective cohort study. *Critical Care* (2016) 20:367. DOI: 10.1186/s13054-016-1538-4.

² Zusman et al. Predictive equations versus measured energy expenditure by indirect calorimetry: A retrospective validation. *Clinical Nutrition* (2019) Jun;38(3):1206-1210. DOI: 10.1016/j.clnu.2018.04.020. Epub 2018 May 8.

³ Frankenfield D, Ashcraft C. Estimating Energy Needs in Nutrition Support Patients. *Journal of Parenteral and Enteral Nutrition*. 35(5). 2011. 563-570.