

NUTRI | LABTM P R O

Enhance Body Composition and Nutritional
Assessment with BIVA Technology



S c i e n c e i n b o d y c o m p o s i t i o n



AKERN

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Innovative,
Reliable,
Validated.

NUTRILAB™ PRO device supports the ERAS (Enhanced Recovery After Surgery) protocols.

	PREHABILITATION	PREOPERATIVE PHASE	INTRAOPERATIVE PHASE	POSTOPERATIVE PHASE
ERAS PROTOCOL TIPS	It is recommended a few weeks prior to surgery that the patient: • adopts a healthy and balanced diet. • refrains from smoking. • refrains from drinking alcohol • conducts adequate physical activity. By following these recommendations, the inflammation state reduces, the hydration status improves thus promoting the release of myokines. This impacts positively on perioperative outcomes and therefore hospital stay is reduced.	It is recommended in this stage: • adequate nutritional support. • maintenance of patient in an euvoletic state (to avoid poor or excessive intake of fluids, that would affect organ perfusion, cardiac activity and favor the onset of respiratory and renal complications). In the screening phase preoperative malnutrition increases morbidity and post-operative mortality. During surgery in patients with intentional weight loss of >10 %, malnutrition increases the risk of complications.	The intraoperative phase extends from the time the patient is admitted to the operating room, to the time of anesthesia administration, performance of the surgical procedure and until the patient is transported to the recovery room. During surgery, intra-operative fluid management and patient water balance are often difficult to address. Managing and preventing fluid overload or deficit has a high level of recommendation.	The main objective of the ERAS guidelines is to ensure faster recovery and early hospital discharge, of course, with fewer complications. Typical post-operative complications derive from fluid management. Patients with post-operative fluid overload are normally treated with loop diuretics or aquaretics, and this, if not adequately managed, may cause dehydration. In order to avoid this risk, that can lead to Acute Kidney Failure (AKI), intravenous administration of these drugs should be interrupted when the correct water balance is achieved.
NUTRILAB PRO SUPPORT TO ERAS PROTOCOL TIPS	Thanks to the sensitivity and specificity of the vectorial technique (BIVA) for fluid assessment, the Nutrilab™ PRO analyzer offers accurate information on the hydration status of the patient, thus identifying dehydration or fluid overload. Also, by monitoring the patient's Phase angle (PhA) It is possible to verify the effectiveness of the physical activity that he is conducting.	The quantitative and qualitative assessment of body composition allows to assess the level of malnutrition Nutrigram® scale, identifying conditions of pre-sarcopenia, sarcopenia, or "low muscle" down to severe malnutrition. Thanks to the sensitivity of the BIVA technique and the reliability of specific predictive estimates, it is possible to adjust the nutritional plan accordingly in a more specific and accurate way.	Individual response to infusion therapy can be monitored by controlling tissue hydration with the Hydragram® scale. Adequate tissue hydration correlates positively with better clinical outcomes.	To verify the patient responsiveness to a given diuretic therapy it is possible to monitor his hydration status using the Hydragram® index. This validated and accurate scale can be adopted more than once a day, and helps in preventing : • acute dehydration with consequent oliguria/anuria; • excessive infusion with the risk of cardiopulmonary complications and accumulation of fluids in the third space.



All in one solution.

NUTRILAB™ PRO is an innovative body composition analyser, equipped with a touchscreen, which guarantees optimal care in the clinic, at the patient's bedside and at home.

Designed to meet the needs of modern clinical practice, **NUTRILAB™ PRO** detects bioelectrical parameter alterations (BIVA) and aids in the early detection and management of critical conditions such as sarcopenia, malnutrition and sarcopenic obesity.

Test results are displayed on the screen for a quick assessment and can be stored in the device database. For further evaluation, data analyses can be downloaded on the medical software platform, **Bodygram® HBO**, installed on PC.



BODY
COMPOSITION



SARCOPENIC
OBESITY



MALNUTRITION



HYDRATION



SARCOPENIA



PARAMETERS
OVER TIME

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The importance of body composition monitoring for surgical patients

Enhanced recovery after surgery (ERAS) protocols are standard, organized, multimodal perioperative care pathways designed to achieve early recovery after surgical procedures and are based on the best scientific evidences.

The goals of all society ERAS guidelines are to maintain preoperative organ function and reduce the profound stress response after surgery; the aim is early and safe recovery for the patient, both during hospital stay but also following hospital discharge.

Nutritional and hydration monitoring can support early identification of clinical prognostic indicators: patient outcome is improved and hospital stay is reduced.

Nutrilab™ PRO also allows to manage:

- the nutritional risk by validated screening questionnaires embedded in the user interface (MNA®, Must®, NRS 2002).
- a rapid and automatic calculation of the malnutrition, sarcopenia and sarcopenic obesity risk indexes.
- the calculation of the nutritional indices BCMI, SMMI, ASMMI and FFMI.
- immediate visualization of the hydration and nutritional conditions through the validated colorimetric scales "Hydragram®" and "Nutrigram®".
- compliance to the criteria of the major scientific society guidelines (ESPEN, EASO, ERAS, ESC, ESE, ESMO).



Certifications



All **AKERN®** devices hold a certificate from the European notified body under Medical Device Directive (**93/42/EEC**) and are compliant to the **ISO 13485** quality system standard for medical device producers.



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**CE Medical Device
CLASS IIA**

| BODYGRAM®

**CE Medical Device
CLASS I**

Nutrilab™ PRO is suitable from pediatric to elderly patients and is not contraindicated for use in patients with implantable cardioverter defibrillators or pacemakers, or in pregnant women.

MODEL	PRODUCT CATALOGUE NO.	DESCRIPTION
Nutrilab™ PRO	00NPO	Phase sensitive bioelectrical impedance analyser with hydration and nutrition monitor for detailed BIVA, 3C total body analysis, specific panels for screening and diagnosis of malnutrition and sarcopenia. Includes Bodygram® HBO software analysis licence. Supplied with one tetrapolar cable set for total body measurement, battery charger, circuit tester, carrying case, operator manuals, 1 pouch of compatible electrodes.
BIATRODES™ ELECTRODES	0ELB100	Disposable single-use low impedance electrode certified for bioimpedance analysis. 1 pouch of electrodes = 100 units (25 tests)
BIVATRODES™ ELECTRODES	0ELBIVA	Disposable single-use low impedance electrode, pre-spaced, certified for bioimpedance analysis, highly repeatable. 1 pouch of electrodes = 36 units (18 tests)

Only the use of compliant, single-use electrodes, branded **AKERN®**, guarantee the certified performance of all **AKERN®** sensors, validated in over 4000 publications since over 40 years.

Bibliographic references

- Melloul, Emmanuel, et al. "Guidelines for perioperative care for pancreatoduodenectomy: enhanced recovery after surgery (ERAS) recommendations 2019." *World journal of surgery* 44.7 (2020): 2056-2084.
- Sandini, M., et al. "Bioimpedance vector analysis (biva) predicts morbidity following pancreatic resection for cancer." *Nutrition* 65 (2019).
- Roccamatysi, Linda, et al. "Preoperative standardized phase angle at bioimpedance vector analysis predicts the outbreak of antimicrobial-resistant infections after major abdominal oncologic surgery: A prospective trial." *Nutrition* 86 (2021): 111184.
- U.O. Gustafsson M. J. Scott W. Schwenk N. Demartines D. Roulin N. Francis C. E. McNaught J. MacFie A.S. Liberman M. Soop A. Hill R. H. Kennedy D. N. Lobo K C H. Fearon, O Ljungqvist, Guidelines for Perioperative Care in Elective Colonic Surgery: Enhanced Recovery After Surgery (ERAS), Society Recommendations, *World Journal of Surgery* February 2013, Volume 37, Issue 2 pp 259-284.
- Sammour T, Zargar – Shoshtari K, Kahokehr A, Hill AG, A programme of Enhanced Recovery After Surgery (ERAS) is a cost-effective intervention in elective colonic surgery. *NZ Med J.* 2010 Jul 30; 123 (1319). 61-70.

- Fearon KC, Ljungqvist O, Von Meyenfeldt M, Revhaug A et al, Enhanced Recovery After Surgery: a consensus review of clinical care for patients undergoing colonic resection. *Clin Nutr.* 2005 Jun; 24(3):466-77.
- Lobo, Dileep N., et al. "Perioperative nutrition: recommendations from the ESPEN expert group." *Clinical nutrition* (2020).
- Fiorindi, Camilla, et al. "GLIM Criteria for Malnutrition in Surgical IBD Patients: A Pilot Study." *Nutrients* 12.8 (2020): 222.
- Fiorindi, Camilla, et al. "Effect of long-lasting nutritional prehabilitation on postoperative outcome in elective surgery for IBD." *Clinical Nutrition* 40.3 (2021): 928-935.
- Rinninella, Emanuele, et al. "NutriCatt protocol in the Enhanced Recovery After Surgery (ERAS) program for colorectal surgery: The nutritional support improves clinical and cost-effectiveness outcomes." *Nutrition* 50 (2018): 74-81.
- Rinninella, Emanuele, et al. "NutriCatt Protocol Improves Body Composition and Clinical Outcomes in Elderly Patients Undergoing Colorectal Surgery in ERAS Program: A Retrospective Cohort Study." *Nutrients* 13.6 (2021): 1781.
- Uccella, Stefano, et al. "Assessment of preoperative nutritional status using BIA-derived phase angle (PhA) in patients with advanced ovarian cancer: correlation with the extent of cytoreduction and complications." *Gynecologic oncology* 149.2 (2018): 263-269.

AKERN S.r.l.

Head office: Via Lisbona, 32/34 50065 Pontassieve (FI) • Italy
Registered office: Via Campodavola, 1 56122 Pisa (PI) • Italy
Tel. +39 055 8315658

www.akern.com



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Science in body composition