

Patients are at the heart of what we do

The amazing new

BioScan *touch i8*

Bioelectrical Impedance Body Composition Monitor



Non Invasive Fluid Management & Malnutrition Assessment



MALTRON
Your health our vision

The assessment of patients' fluid status and Malnutrition is fundamental to good patient care.

Avoid Fluid Overload

Reduce Morbidity and Mortality

Fluid excess is associated with increased morbidity and mortality. Studies have shown a positive correlation between fluid overload and adverse outcomes in critically ill patients admitted to the intensive care unit. Fluid overload can lead to several complications such as pulmonary edema, cardiac failure, delayed wound healing, tissue breakdown, and impaired bowel function. The evaluation of volume status is crucial in the early management of critically ill patients.

The Right assessment, leads to the right amount of fluid at the right time. The **BioScan touch i8** is the right monitor to use.

Non-invasive Accurate Safe

Benefits:

- ✓ Assess Fluid overload early
- ✓ Detect Malnutrition
- ✓ Better Patient care
- ✓ More stable patients
- ✓ Perform assessment at every stage
- ✓ Immediate results
- ✓ Reduce risk of cardiovascular Complications
- ✓ Decrease Complications
- ✓ Increase efficiency
- ✓ Reduce number of interventions
- ✓ Reduce fluid used
- ✓ Reduce hospital stay
- ✓ Better management of resources
- ✓ Better patient outcome and Improve quality of life



Maltron's 3 Steps to fluid Stewardship

PFP assessment

Don't overcomplicate - Keep it quick and simple

PERSONALISED



Step 1:
Pre Assessment

On arrival of patients in ICU and before any treatment assess patients fluid status and Malnutrition index with **BioScan touch i8**

FLUID



Step 2:
Mid Assessment

On initiating fluid resuscitation continually monitor fluid status and Malnutrition index with **BioScan touch i8**

Adjust fluid resuscitation accordingly

PLAN



Step 3:
Post Assessment

Monitor hypervolemic and Malnutrition status using the Maltron **BioScan touch i8**

=

Improved Patient Outcome



Some key parameters

Hydration

- Fluid Overload (Volume Excess)
- Separation of Intravascular & Extravascular Fluid
- Intravascular Fluid
- Extravascular Fluid
- Capillary Leak
- ECW/ICW Ratio
- Interstitial Fluid
- Total Body Water
- Extracellular Water
- Fat Free Mass Hydration
- Dehydration
- Dry Weight
- Pre, Mid, Post Assessments
- Kt/v
- UFR
- Plasma
- Red Cells
- Hematocrit

Kidney Function

- GFR

Body Composition

- Malnutrition Index
- Body Cell Mass
- Muscle Mass
- Body Fat
- Cellular Biomarker (Phase Angle)
- Bone Density
- Bone Mineral Content
- Fitness Score

Mineral Contents

- Protein
- Potassium
- Calcium
- Glycogen
- Total Body Mineral Levels

All parameters tracked over time

How does it work?

The use of multiple innovative technologies of BIA, FDSA and AI allows the **BioScan touch i8** to perform combinations of unique assessments.

Total of four or eight electrodes (on hands and feet) are applied.

Electrode cables are clipped to the electrodes and connected to the **BioScan touch i8**. Patient data for example Height, Weight, Age, Ethnicity is entered into the BioScan.

Once the input of the data is completed, commence the test.



Impedance

The Impedance (Resistance) and Phase Angle (Reactance) of the body is measured.

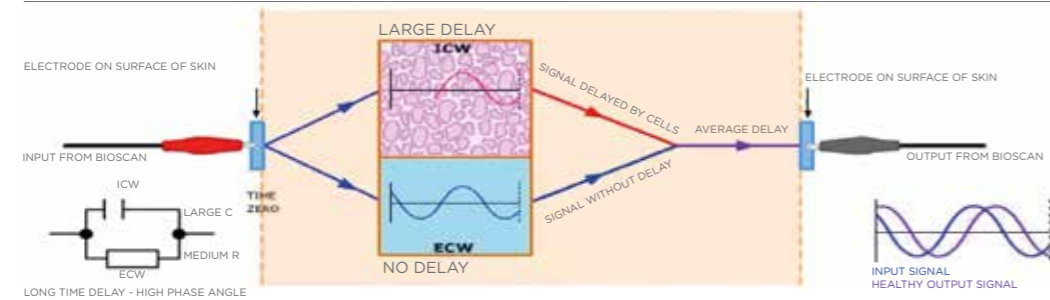
A very tiny safe amount of electrical current at different frequencies are applied through the electrodes and transmitted into the body. The voltage is measured via the receiving electrodes. At low frequencies the current passes around the cells and at high frequencies the current will go through the cells.

The total testing process is completed in seconds with full analysis of the body.

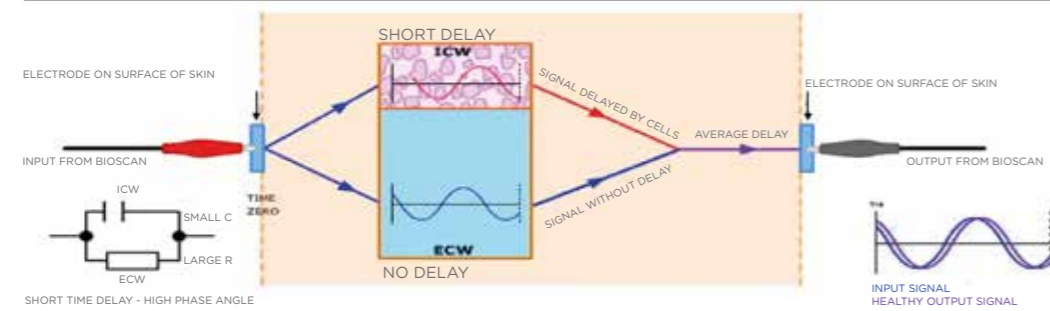
Make Time-Intensive, Costly Diagnostic Tests Simple And Inexpensive To Perform

Phase shift

HEALTHY



UNHEALTHY



Phase Shift is an indicator of good health. The Phase Angle has been found to be an important indicator of mortality and the overall condition of the patient.

The Phase Angle is the ratio of resistance, i.e. resistance, to reactance, the delay of which is caused by healthy cell membranes. Zero (0) degrees indicate that there are no cell membranes at all, 90 degrees is a capacitive circuit consisting of all membranes without liquid.

The Phase Angle of a healthy person is about 6 to 11 degrees. A low Phase Angle indicates cell death or selective permeability of the cell membrane. A high Phase Angle indicates a high reactance and a correspondingly higher amount of body cell mass (BCM), i.e. a good nutritional status.

Noninvasive, Accurate, Safe & Validated Technology

The Bioelectrical Impedance Body Composition Monitors clinical evidence, with technology validation

This block contains several research papers and clinical evidence. The central focus is a paper titled "Impact of hyperhydration on the mortality risk in critically ill patients admitted in intensive care units: comparison between bioelectrical impedance vector analysis and cumulative fluid balance recording" published in Critical Care. The paper's abstract states: "Background: Studies have demonstrated a positive correlation between fluid overload (FO) and adverse outcomes in critically ill patients. The present study aims at defining the impact of hyperhydration on the Intensive Care Unit (ICU) mortality risk, comparing Bioelectrical Impedance Vector Analysis (BIVA) assessment with cumulative fluid balance (CFB) recording. Methods: We performed a prospective, dual-centre, clinician-blinded, observational study of consecutive patients admitted to ICU with an expected length of ICU stay of at least 72 hours. During observational period (72-120 hours), CFB was recorded and cumulative FO was calculated. At the admission and daily during the observational period, BIVA was performed. We considered FO between 5% and 600% as moderate and a FO >10% as severe. According to BIVA hydration scale of lean body mass, patients were classified as normohydrated (>72.7%-74.3%), mild (>71%-72.7%), moderate (>69%-71%) and severe (<69%) dehydrated and mild (>74.3%-81%), moderate (>81%-87%) and severe (>87%) hyperhydrated. Two multivariate logistic regression models were performed: the ICU mortality was the response variable, while the predictor variables were hyperhydration, measured by BIVA (BIVA model), and FO (FO model). A p-value <0.05 was considered to indicate statistical significance. Results: One hundred and twenty-five patients were enrolled (mean age 64.8 ± 16.9 years, 65.6% male). Five hundred and fifteen BIVA measurements were performed. The mean CFB recorded at the end of the observational period was 2.7 ± 4.1 L, while the maximum hydration of lean body mass estimated by BIVA was 83.67 ± 6.39%. Severe hyperhydration measured by BIVA was the only variable found to be significantly associated with ICU mortality (OR 2.239; 95% CI 1.36-3.6607; p < 0.01). Continued on next page." Other papers include "Fluid Management in the Intensive Care Unit: Bioelectrical Impedance Vector Analysis as a Tool to Assess Hydration Status and Optimal Fluid Balance in Critically Ill Patients" and "Fluid overload in the ICU: evaluation and management".



Early detection - early Intervention

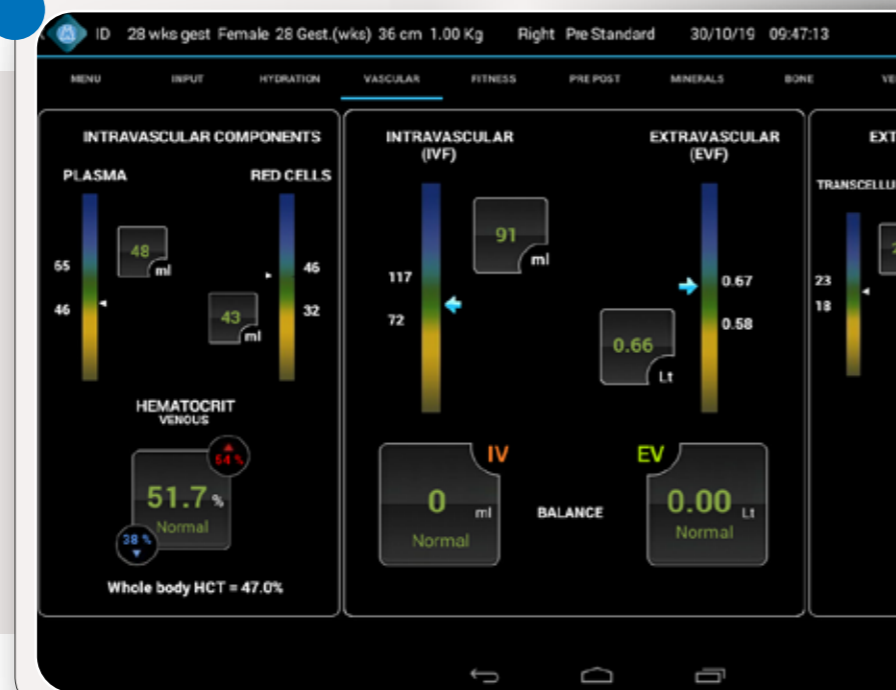
Each assessment - is designed to accurately capture and present individual measurements in order to meet the current health status of the patient. The visualization and the simplified design provides a better understanding of the patient's condition.

Fluid Excess and Malnutrition

Malnutrition is highly prevalent in critically ill patients and is associated with the increased healthcare-related cost and poor patient outcomes.

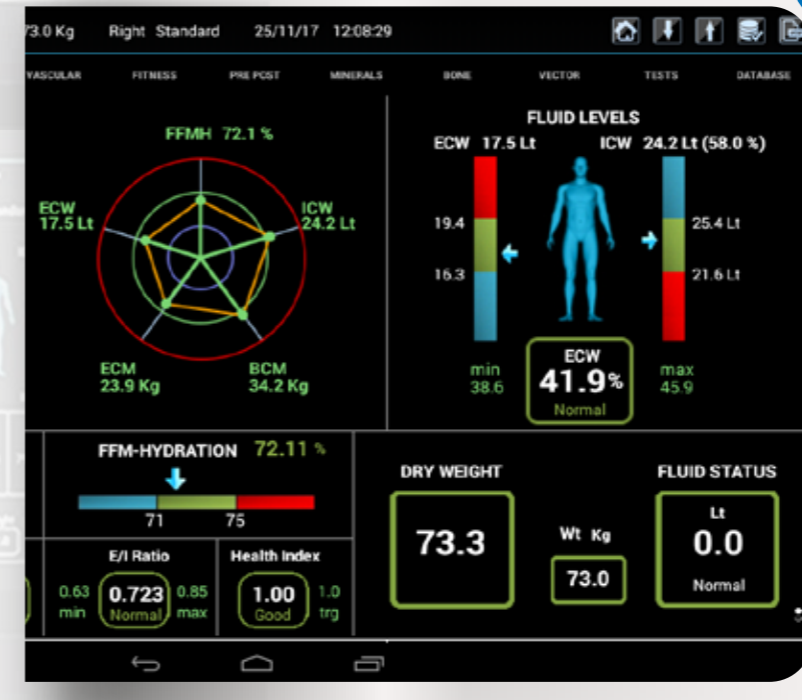
Vascular fluid assessment

- Intravascular (IVF)
- Extravascular (EVF)
- IV & EV Balance
- Interstitial Fluid
- Interstitial Overload
- Plasma
- Red Cells
- Hematocrit Venous



Fluid and Malnutrition

- Volume excess
- Capillary Leak
- Muscle mass
- Malnutrition
- Total Body Water
- Extracellular Water
- Intracellular Water
- Fat Free Mass Hydration



In critically ill patients the assessment of Intravascular and Extravascular volume status and Volume responsiveness is crucial

Accurate volume assessment of a patient's volume status, as well as whether they will respond to a fluid challenge with an increase in cardiac output, is a critical task in the care of critically ill patients. Despite this, most decisions regarding fluid therapy are made either empirically or with limited and poor data.¹

Target Range

All assessments show whether patient's parameters are within the individualised pre-set normal range.

Use BioScan *touch i8* Pre, Mid and Post assessment monitor and track patient changes to allow early interventions and optimise fluid status

Pre - Mid - Post assessment

Comparing Pre - Mid - Post assessment allows physicians to monitor and track patient's progress from day-to-day. This allows early intervention and optimal achievement of target.

Maltron UFR

Maltron Ultra-Filtration Rate, uses Maltron's proprietary method to calculate UFR. This is more consistent across both underweight and overweight groups of patients.

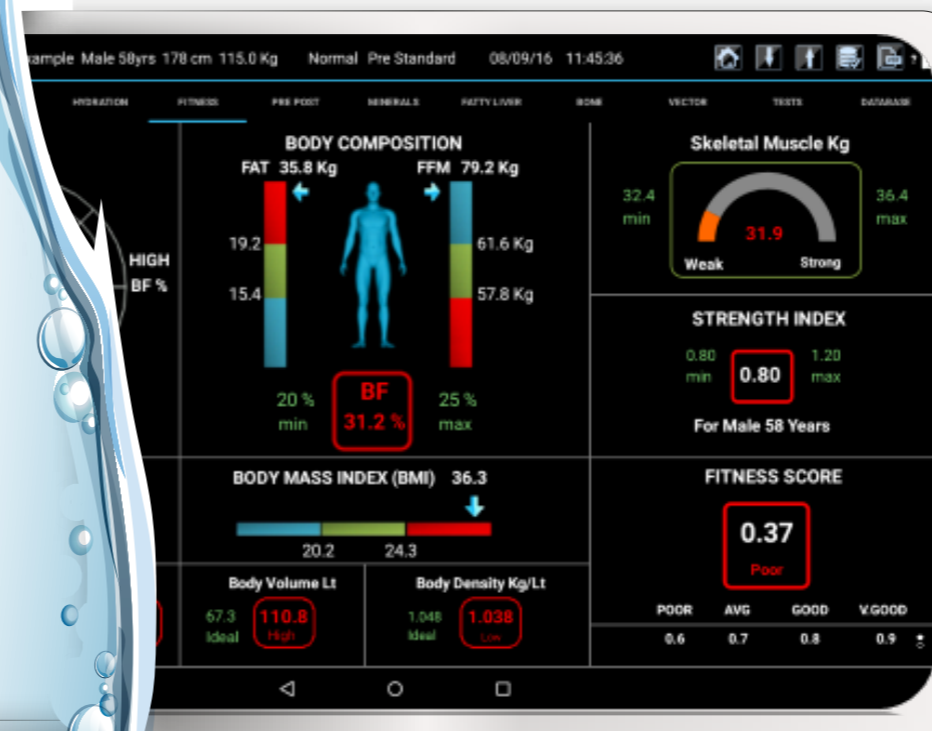
Patient trajectory, capturing and tracking complex change with improvement in intervention.



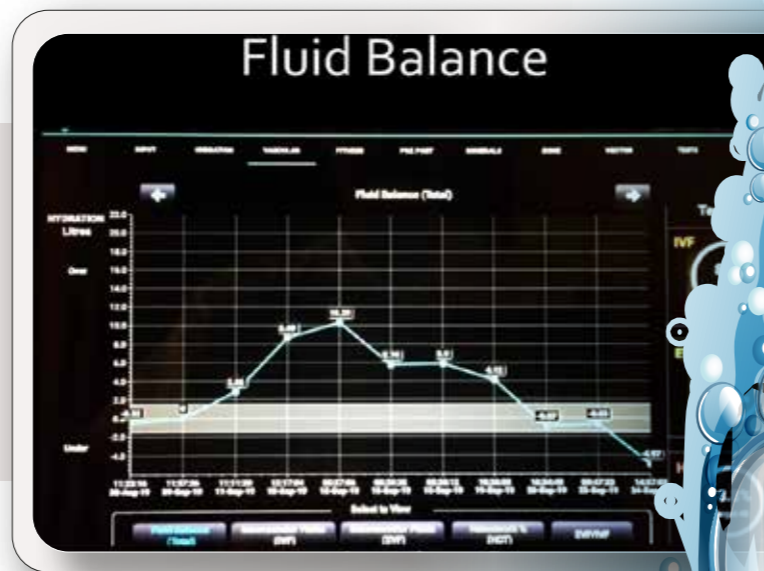
Kt/v

The formula, recommended for the calculation of Kt/v, was derived in healthy volunteers, leading to potential errors.

Maltron Kt/v provides a more accurate assessment of dialysis efficiency.



- Skeletal Muscle
- Fitness Score
- Body Cell Mass
- Body Fat
- Body Weight
- BMI



Muscle loss in ICU

The prevention of muscle atrophy is a primary goal of treatment for the patients in the ICU, because it reduces the incidence of the disease, reduces the time spent in ICU and finally improves the quality of patients' life.²

The loss of muscle mass is one of the most important and frequent problems observed in patients hospitalized in the ICU, affecting the cardiovascular, the respiratory and the circulatory system. It is mainly caused by prolonged bed rest, sedation, both pharmaceutical and non-pharmaceutical and immobilization.

Early diagnosis of which patients are at risk is vitally important.



Assessment of fluid accumulation inside the torso

Fluid accumulation is one of the significant and early-stage manifestations of fatal diseases, such as lung-cancer, liver-failure and congestive heart-failure

Early stage assessment or monitoring of the Torso is a key to timely medical intervention in order to help prevent complication and worsening of patients which could lead to mortality.

Accumulation of fluid in the torso area (inside or around the lungs), prevents the lungs from exchanging gases causing fatal consequences if not treated properly and timely.

According to the World Health Organization (WHO) cardiovascular diseases (CVD's) are the leading cause of death in the world. World Health Care Fact Sheet on Cardiovascular diseases (CVDs).²⁴

Although, CT - Scan are commonly used for the detection of thoracic fluid, it cannot be used frequently due to ionizing radiation, the high cost, lack of mobility and on these types of patients.

BioScan *touch i8* is a safe, accurate, non-invasive and low-cost device that can be used for the assessment and monitoring of the torso of patient with acute respiratory distress syndrome (ARDS)

Results show data of Normal Patient vs Clinical patient

Healthy patient



Total body water in the trunk and limbs

Clinical patient



Total body water in the trunk and limbs - showing over hydration in the trunk

Healthy patient



Extracellular water in the trunk and limbs

Clinical patient



Extracellular water in the trunk and limbs - showing over hydration in the trunk

Fluid overload patients require accurate management to optimise fluid balance

Numerous recent studies have shown fluid overload to have adverse outcomes on patients. These studies have shown a correlation between fluid overload and increased mortality along with several complications like pulmonary edema, cardiac failure, impaired bowel function, delayed wound healing and tissue breakdown.³

In the management of critically ill patients accurate evaluation of volume status is crucial in the early management of these patients.

Knowing the volume status is vital for appropriate therapy, errors could lead to either a lack of essential treatment or unnecessary fluid administration, and both scenarios are associated with increased mortality.³

Successful fluid overload treatments depend on precise assessment of individual volume status, understanding the principles of fluid management with ultrafiltration, and clear treatment goals.

Several observational studies have demonstrated a correlation between fluid overload and mortality in critically ill patients with acute respiratory distress syndrome, acute lung injury, sepsis, and AKI. Bouchard et al., have shown that patients with fluid overload defined as an increase in body weight of over 10% had significantly more respiratory failure, need of mechanical ventilation, and more sepsis. After adjusting

for severity of illness, AKI patients with fluid overload had increased 30 day and 60 day mortality. Among survivors, AKI patients who required renal replacement therapy had a significantly lower level of fluid accumulation at initiation of dialysis and at dialysis cessation than non-survivors. Renal recovery was significantly lower in patients with fluid overload.^{3,9}

In children, a multicenter prospective study found that the percentage of fluid accumulation at initiation of CRRT was significantly lower in the survivors (14.2 % \pm 15.9 % vs. 25.4 % \pm 32.9 %, P = 0.03).^{3,10}



Another consideration is Malnutrition which can decrease Muscle function.¹⁶ Loss of Muscle Mass is linked to an increased risk of infection and increased risk of mortality¹⁷

Malnutrition
Malnutrition is a strong predictor of mortality and an accurate method for establishing a healthy subjects nutritional status or a patient degree of malnutrition.



Recent ESPEN expert statements and practical guidance for nutritional management of individuals with SARS-CoV-2 infection highlighted the importance of assessment in Prevention and treatment of malnutrition. It was suggested Impedance analysis as one of the methods to assess Muscle mass.²⁵

Ayse Baccioglu et.al although Malnutrition has been associated with impaired health status in patients with chronic obstructive pulmonary disease (COPD), the effects of body composition (body fat and protein percentage) in patients with COPD have not been demonstrated. A total of 180 stable patients with COPD and 50 healthy subjects were included in this prospective study. It was found stable patients with COPD showed frequent alterations in body composition besides malnutrition. Malnutrition and body decomposition were both related to impairment in respiratory muscle strength, and diffusing capacity of the lung. These results indicate that body composition should be a part of nutritional assessment besides BMI.

Dekker MJE et.al study looked at Malnutrition and its association with outcome. Pre dialysis fluid overload (FO) in haemodialysis (HD) patients is associated with an increased risk of death, further increased by the presence of inflammation. The study looked at the associations of Fluid overload, malnutrition, and inflammation with outcome. The presence of malnutrition found to be associated with higher levels of Fluid overload, which amounted to further increase when inflammation was present. It was shown that Malnutrition as singular risk factor was not associated with increased mortality risk. The highest mortality observed in patients with the presence of all 3 risk factors.

Detailed Health Report of Patient Assessment



Take control, be proactive and make a difference

Because every life deserves affordable care



BioScan touch i8

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At Maltron we don't just offer Body Composition Monitors, we offer solutions. Developed for a simple and easy integration into your current practices. We provide all aspects of comprehensive training to give your staff the skills they need.

We have over three decades of expertise fuelling our clinical innovations. Our cutting-edge Body composition monitor solutions are specifically designed to be an effective tool in hospital settings.

Together, we can create better healthcare.

Contact us to explore our range of Body composition monitors.



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