

# NICaS<sup>®</sup>

BIOIMPEDANCE CARDIAC  
MEASURING and ANALYZING SYSTEM



**NIMEDICAL**

NICaS Hemodynamic NAVIGATOR™

# Heart Failure



## M 6.5

6.5 million adults in the United States are diagnosed with heart failure

## 1 IN 8 DEATHS

Heart failure was a contributing cause of 1 in 8 deaths in 2017

## B\$ 30.7

Heart failure costs the U.S. an estimated \$30.7 billion annually

## CHALLENGES



Differentiating the causes of acute or chronic hemodynamic instability



Over or Under-diuretising HF patient



Viewing trends in hemodynamic status throughout the patient's treatment in the community setting or in the hospital.

## SOLUTION

NICaS Hemodynamic NAVIGATOR System provides each patient with a personal hemodynamic profile (information otherwise available only in high hospital level of care). By utilizing this information, Healthcare providers are able to better treat their patients, yielding a substantial reduction in readmission rates and thus lower the economic as well as clinical burden of HF.



View trends in hemodynamic profile on a specially designed screen that is easy to understand



Easy to decide which medication to administer



Our clients report a 95% decrease in readmission

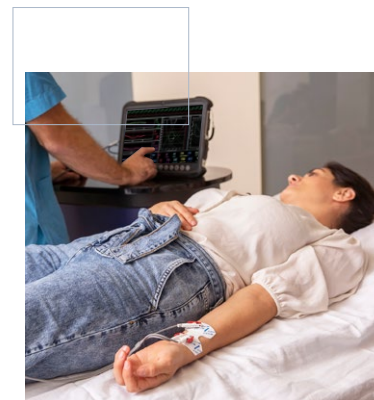
## NICaS<sup>®</sup> Hemodynamic NAVIGATOR™

### Treat your Cardiovascular patients as per their specific hemodynamic profiles

**Don't guess your patient's volume, peripheral resistance and perfusion. NICaS Hemodynamic NAVIGATOR** is an optimal tool in making better informed decisions regarding more aggressive diuresis or need for increase vasodilation.



NICaS System Medical Tablet Configuration



NICaS Sensors Connect to patients' wrist and contralateral ankle

# Hypertension



## 130<sub>M</sub>

There are 130 million hypertension patients in the U.S.

## 157<sub>M</sub>

157 million physician office visits in 2014

## B\$ 131

High blood pressure costs the U.S. approximately \$131 billion each year.

## CHALLENGES



1 in 4 adults (24%) with hypertension have their condition under control



Current statistically based protocols are partially successful in controlling hypertension (54%)



Very difficult to differentiate the underlying cause of HTN without a complete hemodynamic profile of the patient

## SOLUTION

NICaS enables the treating physicians to determine the exact cause of hypertension. This is based on each patient's objective hemodynamic parameters. These parameters allow the physician a "deeper" understanding of the total dynamics causing each patient's hypertension. With NICaS, physicians can be more effective in prescribing the proper medication for hypertension



Recent studies and customer experience show an increase in hypertension control to above 90%.



Personalized treatment according to individual hemodynamic profiles — no more guessing which medication to prescribe

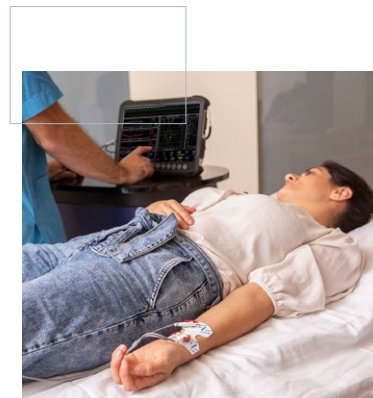
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# Preeclampsia



## 10%

10% of all pregnancies are impacted by hypertension

## 14%

14% of all maternal deaths worldwide are due to hypertensive disorders

## 46%

46% of women with gestational hypertension will progress to preeclampsia.

## CHALLENGES



Preeclampsia and eclampsia increase risks of significant maternal and perinatal adverse outcomes. These may include placental abruption, preterm birth, and low birthweight.



Preeclampsia management is primarily focused on the therapy of maternal hypertension. This can reduce the risk of severe hypertensive episodes and safely prolong gestation.



There is no accepted standard of the management of preeclampsia

## SOLUTION

NICaS is designed to assist physicians to determine the exact cause of hypertension. NICaS is based on patients' objective hemodynamic parameters which allow physicians a deeper understanding of the total dynamics concerning each patient's hypertension. With NICaS, physicians can be more effective in prescribing the right medication for the right hypertension cause.



No more guessing what medication to administer personalized treatment according to individual hemodynamic profile



NICaS eliminates hypertension as a risk factor that can cause complications during pregnancy

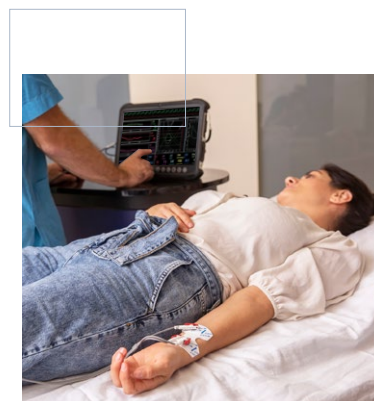
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## 80%

By 2025, 80% of end-stage kidney disease patients are expected to receive home dialysis or kidney transplants

## 88%

88% of patients receive treatment at dialysis centers

## B\$ 84

Medicare annual spending: 84B\$ on CKD patients .

## CHALLENGES



Determine the patient's dry weight level: How much fluid do you need remove during the dialysis session?



Understanding the cause of intradialytic hypotension or hypertension events



Determine what medication to prescribe in order to keep blood pressure stable during and after the treatment.

## SOLUTION

NICaS is designed to assist physicians to determine the patient's body composition and the cause of intradialytic hypertension. Furthermore, hypotension is based on patients' objective hemodynamic parameters. These parameters provide physicians with a deeper understanding of the total dynamics that affect each patient's individual hemodynamic status.

With NICaS, physicians can also be more effective in determining the proper dry weight and the dialysis session plan.



Accurate dry weight – no guessing



Easy to determine which medication to prescribe



Significant decrease of intradialytic hypotension/hypertension events

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## 4,300 \$

The average bed cost per day in the ICU

## B\$ 108

Annual U.S. cost

## 4.1 %

4.1% of national health expenditures

### CHALLENGES



Assess fluid status and fluid responsiveness



Monitor and treat hypotensive/hypertensive patients



Evaluate drug response and online drug titration.

### SOLUTION

NICaS can assist physicians in determining the patient's body composition. With NICaS, physicians can also determine the cause of hypertension or hypotension, based on each patient's objective hemodynamic parameters. These parameters provide the physician with a deeper understanding of the total dynamics that cause patients' individual hemodynamic status and fluctuations.

NICaS helps physicians be more effective in determining the proper dry weight, fluid volume status and orders. With NICaS, they can prescribe the proper medication that addresses the specific cause of each condition.

What's more, NICaS helps reduce the length of hospital stay and/or patient mortality.



Personalized treatment according to individual hemodynamic profiles —stop guessing what medication to administer



View trends of the hemodynamic profile on a specially designed screen that is easy to operate and understand

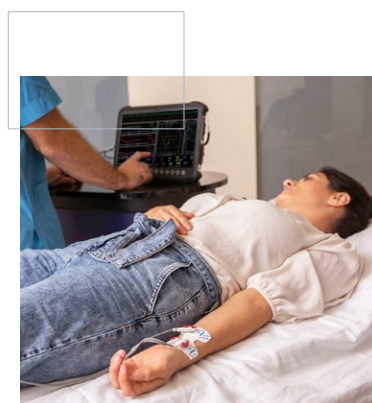
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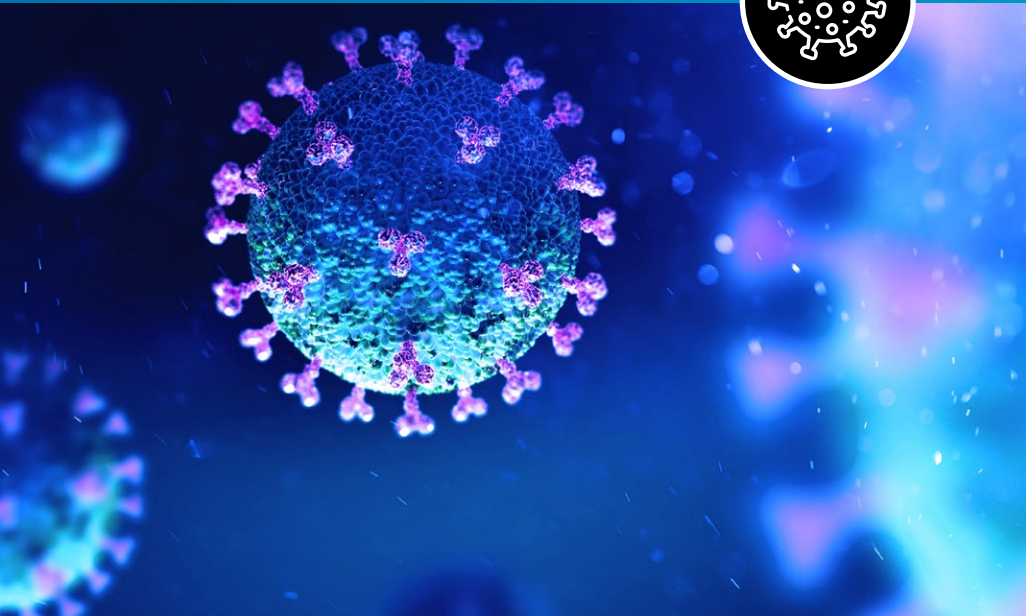
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## 0.4%

0.4% mortality rate Over 1 Million dead

## 7 Days

7 days median hospital stay in ICU resulted in various comorbidities

## 60%

60% of recovering patients showed evidence of active myocardial inflammation

## CHALLENGES



Current trends advise against mechanical ventilation. This makes managing severe patients extremely challenging due to missing parameters of tissue oxygenation



Limited knowledge of the virus requires better patient surveillance



Risk of medical team contamination

## SOLUTION

NICaS system closes treatment gaps by providing accurate and continuous cardiorespiratory and fluid data. This enables:

- 1) Efficient Patient management
- 2) Online drug and oxygen titration.
- 3) Optimized treatment.
- 4) Clear understanding of oxygen delivery (DO<sub>2</sub>)
- 5) Early signs of oxygen delivery failure (epoxia)



Closes the information gap to enable better treatment strategy



Provides information remotely without risk to medical teams

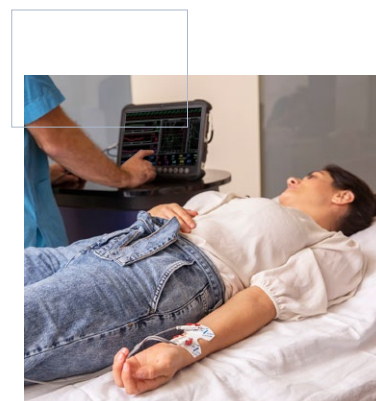
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NICaS provides real-time continuously accurate<sup>1,2,3</sup> and highly reproducible<sup>4</sup> hemodynamic status including: stroke volume, cardiac output, total peripheral resistance, cardiac power index and total body water

NICaS can help you:

- > Assessment of inclusion criteria
- > Attain real-time dose titration information
- > Monitor cardiac safety in both cardiovascular and non-cardiovascular trials
- > Evaluate drug efficacy and safety
- > Support of single or multi site clinical trials
- > Document desired and adverse effects of candidate compounds
- > Reduce total trial time by facilitating patient recruitment
- > Decrease time-to-market of successful compounds

NICaS unique technology:

- > Allows easy application with only two sensors
- > Secure data transfer to core lab
- > Accurate assessment of the smallest hemodynamic changes

1. O. L. Paredes, et al Impedance Cardiography for Cardiac Output Estimation Circulation Journal 2006; 70:1164-1168 2. G. Cotter, et al Impedance Cardiography revisited Physiological Measurements 2006;27:817-827 3. Amram. J. Cohen, et al Accurate, Noninvasive ..Chest 2004; 1431-1440 4. Van De Water, et al., Chest 123: 2028-2033st 5. Tita et al A Phase 2a study of BMS-986231 in HFrEF Eur J Heart Fail. 2017 Jul 5

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