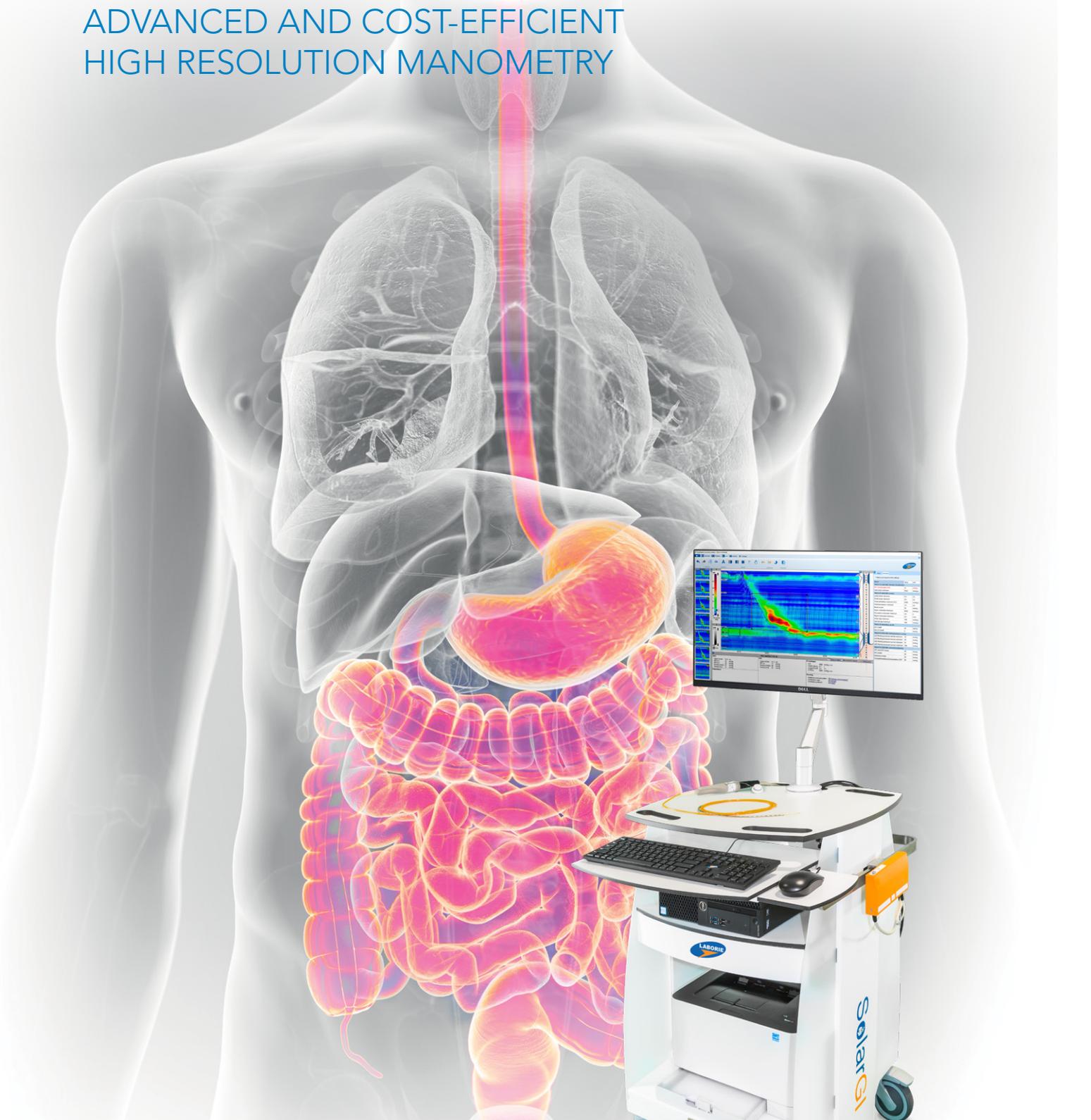


# SOLAR GI HRM

ADVANCED AND COST-EFFICIENT  
HIGH RESOLUTION MANOMETRY



QUICKVIEW DATA ANALYSIS PROGRAM  
3D ESOPHAGEAL PRESSURE TOPOGRAPHY  
LATEST CHICAGO CLASSIFICATION  
ECONOMICAL AND CUSTOMIZABLE



## SOLAR GI HRM HIGHLIGHTS

- Measuring simultaneously up to 40 pressure channels and 16 Impedance channels
- Reusable and single use catheter solutions (solid state and water perfused, both up to 40 pressure channels)
- Variety of catheter diameters, to ensure accurate HRM measurement for different patient groups
- Intuitive software with remote control leads to simple HRM procedures
- Event-based analysis software, where events can be Resting periods, Swallows, etc.
- QuickView program for fast and easy analysis
- Latest HRM results and Chicago Classification criteria included
- 3D Esophageal Pressure Topography plots for a new perspective on the events
- 360° Tube view mode (LES and anal sphincter)
- Synchronized video manometry optional (X-Ray, C-Arm, Ultrasound)
- Expandable with HRIM, HRSM, HRCM and HRAM
- Flexible HRM systems solutions for every budget

## INTRODUCING SOLAR GI HRM

High Resolution Manometry (HRM) was the concept and innovation of a remarkable esophagologist, researcher and educator, the late Ray Eugene Clouse, MD. HRM has its roots in conventional perfused manometry. Clouse decided that the esophagus was holding secrets between the widely spaced recording points of conventional manometry catheters.

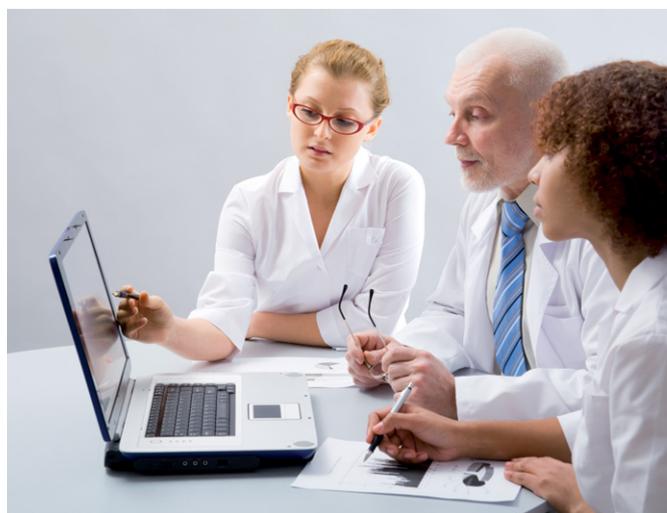
A collaboration between Ray Clouse, Medical Measurement Systems (now Laborie) and Dentsleeve in 1995, resulted in the development of the Clouse Contour Plot, an HRM solution using a 21 channel silicone water perfused catheter, and a UPS 2020 manometry system from MMS.<sup>1)</sup>

Because of the availability of new catheter technologies, smart perfusion systems and faster computers, HRM is becoming the standard to diagnose swallowing disorders and measure pressures in the esophagus.

## THE MOST ADVANCED HRM SYSTEM ON THE MARKET

The Solar GI HRM is currently the most advanced HRM system available. Latest developments such as the Chicago Classification, QuickView analysis program, 3D Esophageal Pressure Topography (EPT) and new catheter technology make Solar GI HRM:

- Extremely easy to use
- Procedures more accurate and reliable
- Data analysis better, simpler and quicker
- Procedure costs lower



<sup>1)</sup> *Neurogastroenterology & Motility*, March 2012, Vol. 24, Suppl. 1, 2-24.  
High resolution manometry: the Ray Clouse legacy.

# LATEST CLINICAL DEVELOPMENTS AVAILABLE

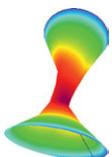
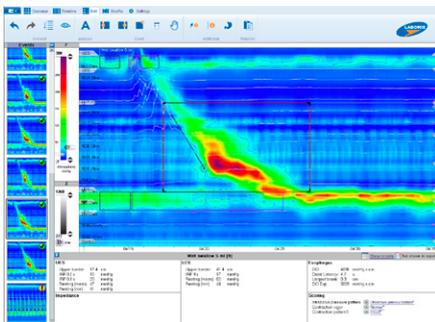
High Resolution Manometry (HRM) is the latest approach of measuring pressures in the esophagus. The Solar GI HRM system simplifies clinical procedures and offers fast and accurate diagnostic reports. Up to 40 closely spaced pressures capture the entire esophageal motor function from the pharynx to the stomach. Visual sphincter recognition makes accurate sphincter location so easy that specialized technical training is no longer required.

## HRM COMBINED WITH IMPEDANCE: HRIM

While HRM measures peristalsis, Impedance tracks the actual bolus movement, making it a very powerful combination as 51% of patients with Inefficient Esophageal Motility (IEM) have normal bolus transit<sup>2</sup>). Solar GI HRIM offers the new standard for total esophageal function monitoring.

## LATEST HRM RESULTS

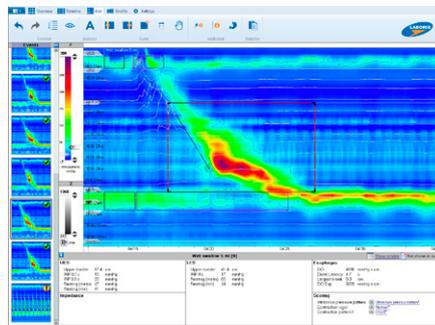
Solar GI HRM includes the latest results for esophageal motility, as recently published by the HRM working group.



360° HRAM: in tube view mode sphincter damage or defects can easily be recognized

## AUTOMATIC CATEGORIZATION OF SWALLOWING DISORDERS

The new Solar GI HRM program automatically categorizes patient swallowing disorders according to the latest Chicago Classification. Individual swallows are automatically classified, and an overall classification is given for the entire HRM study.



## FLEXIBLE CLINICAL SOLUTIONS

Solar GI HRM procedures can be performed with solid state as well as water perfused catheters, with a variety of diameters and pressure channels.

*For example:* use a solid state catheter for esophageal HRM studies in combination with (single use) water perfused catheters for HRAM. This makes the Solar GI HRM system the most flexible system on the market, offering clinical solutions for all patient groups.

## ADVANCED CLINICAL USE

Laborie offers HRM/HRIM applications covering the whole GI tract, such as Small Bowel / Antroduodenum (HRSM), Colon (HRCM) and Anal sphincter (HRAM). HRM/HRIM combined with synchronized Video recording capabilities is available too!



Solar GI HRM 40 solid state system



Solar GI HRM 24-36 channel water perfused system



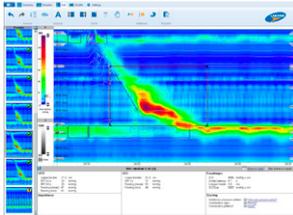
Solar GI HRM Compact 24 channel water perfused system

<sup>2</sup>Tutian R, Castell DO, American Journal of Gastroenterology, 2004, 2:230-236

# HIGH RESOLUTION MANOMETRY HAS NEVER BEEN SO EASY

## HRM STUDIES IN LESS THAN 10 MINUTES

The easy positioning of the HRM catheter makes the esophageal manometry examination so simple that a consistent high quality measurement will be achieved. With the help of intuitive software, the UES and LES can easily be recognized.



Laborie catheters are easily intubated and do not need calibration and temperature compensation, which is convenient and saves valuable time!

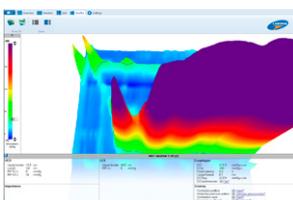
## ACCURATE HRM PROCEDURES WITH INTUITIVE SOFTWARE

After locating both sphincters the HRM examination can be started. By using the remote control, you will be able to stay focused on your patient. Up to 40 pressures cover the complete esophagus. A stepwise pull-back of the catheter is not needed, which saves time compared to conventional manometry.

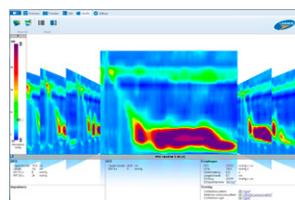
The Solar GI HRM software automatically instructs the examiner when the patient has to swallow water, viscous or solid food. The Solar GI HRM procedure for an assessment of the complete esophagus normally takes less than 10 minutes.



The software program can predefine a selection of HRM protocols for every individual medical professional and/or patient group. This saves preparation time and prevents making mistakes during the study.



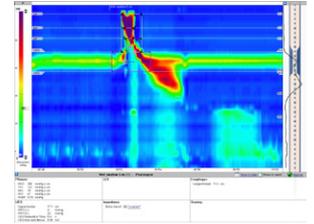
*'Jackhammer' in 3D Esophageal Pressure Topography*



*QuickView shuffle mode*

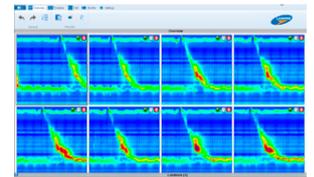
## HIGH-RESOLUTION PHARYNGEAL MANOMETRY (HRPM)

The LABORIE software can also be used to measure pressures and impedance in the pharynx and UES, and help to diagnose swallowing disorders of the pharynx and UES. The software will calculate specific metrics, defined by the HRPM International Working Group, and the results will be reported directly by the LABORIE software.



## QUICKVIEW MAKES ANALYSIS SIMPLE

The new Solar GI HRM software has the unique QuickView software program, which has been developed to make HRM analysis more accurate, faster and easy.

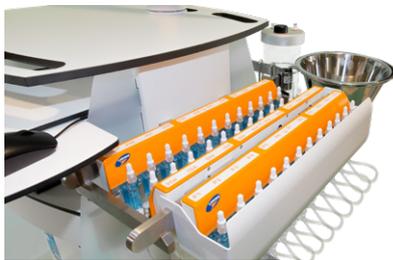


### QUICKVIEW BENEFITS:

- All events will be displayed automatically on screen, providing a quick overview of the study
- QuickView assists you to focus on relevant parts of the study (events) only
- For each event HRM results will be automatically calculated and marked
- Easy adjustment of marker locations, provides you with full control of the calculations
- Calculated results are shown for the selected event
- Clear overview of which events have been analyzed already and which events still need to be reviewed
- Landmarks for UES and LES can easily be adjusted for each event in case of catheter movement
- Automatic classification of each swallow, and overall study classification per latest edition of the Chicago Classification
- Automatic classifications can always be overridden by the user, for full control of the analysis
- Flexible and fully customizable report software (HRM Reporter)
- 3D Esophageal Pressure Topography plots, for a new perspective on the events
- 'Shuffle mode' for easy event scrolling

## SOLAR GI HRM CONFIGURATIONS MEETING EVERY BUDGET

With the Solar GI HRM, studies can be performed with either reusable solid state or single use / reusable water perfused catheters. This offers maximum flexibility in system configuration set-up, clinical solution, investment and procedure costs.



## WATER PERFUSED HRM: UP TO 50% LOWER PROCEDURE COSTS

The price attractiveness of reusable water perfused HRM catheters allows purchase of multiple catheters. Furthermore water perfused catheters do not easily break or need repairs, so procedure costs can be significantly lower.

Other advantages of water perfused HRM are:

- No risk of cancelling studies due to catheter failure
- Reusable water perfused catheters are autoclaveable
- Time saving: single use catheters do not need cleaning
- No risk for cross infections using single use catheters

## UPGRADABILITY AND FLEXIBILITY

Are you looking for an HRM system that is extremely flexible and upgradable with new clinical applications now or in the future? Don't look further!

The Solar GI HRM can be upgraded:

- From 24 to 36 water pressure channels
- From water perfused HRM (24-36) to 40 pressure solid state HRM
- With 16 Impedance channels (water perfused and solid state)
- With conventional 4-8 channel ARM or HRAM water perfused or solid state
- With 360 degrees HRAM



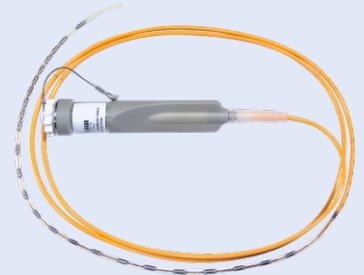
*Upgrade to HRAM at any time*

## NETWORK AND HIS-LINK SOLUTIONS

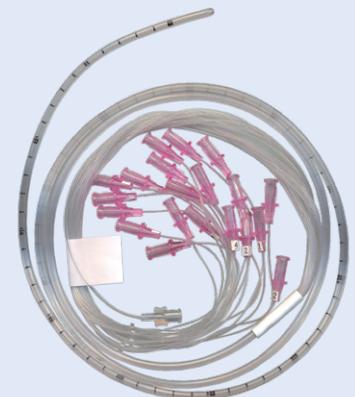
Laborie offers a broad range of system network and Hospital Information System (HIS) / Electronic Medical Record (EMR)-link options. Multiple workstations to view and analyze HRM studies in your own room, patient data import and export from the HIS/EMR, and DICOM PACS solutions offer time saving routines and paperless procedures.



*Solar GI HRM reusable solid state catheters*



*Solar GI HRM reusable water perfused catheter*



*Solar GI HRM single use water perfused catheter*

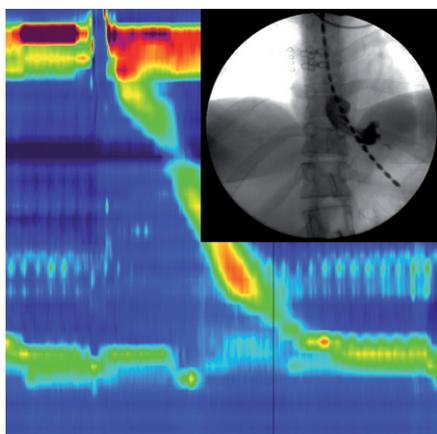


## COMPLETE LINE OF GERD & GI MOTILITY EQUIPMENT

Laborie is not only offering a broad line of HRM and HRIM solutions, but also brings GERD recorders, catheters, accessories and consumables to the market.

The Ohmega pH recorder and the Ohmega Impedance-pH recorder are extremely easy to use and provide accurate measurement results. The Ohmega can be expanded with pressure recording function.

If you are interested in our GERD and GI Motility products, please contact us through one of our branch offices or through one of our official distributors.



*HRM synchronized with X-Ray studies of an abnormal swallow*

## AN OVERVIEW OF THE LABORIE GI LINE

- Ohmega pH recorder
- Ohmega Impedance-pH recorder
- Solar GI HRM / HRIM for esophageal studies
- Solar GI HRAM for anorectal studies
- Specialties for academic and research institutions:
  - Small bowel (antroduodenal) manometry (HRSM)
  - Sphincter of Oddi manometry
  - Colonic manometry (HRCM)
  - 6 channel EGG system
- Biofeedback
- Neuro / High Speed EMG and Stimulation
- (High Res) Synchronized Video manometry (swallow studies and defecography)
- Networking and HIS/EMR-links (HL-7)

