

# QUEST MPS<sup>®</sup> 3 ND

Smarter Myocardial Protection™





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Smarter Myocardial Protection<sup>™</sup>

Introducing the Quest MPS<sup>®</sup> 3 ND Myocardial Protection System, the latest innovation from Quest Medical, Inc., with state-of-the-art technology, requiring no disinfection of the system's internal water circuit. The Quest MPS System's coordinated drug delivery technology is well-known for eliminating patient hemodilution and the associated sequelae caused by cardioplegia delivery. This technology has been proven beneficial for improved patient outcomes as well as a sound investment for hospitals.<sup>1,2</sup>

**The QUEST MPS<sup>®</sup> 3 ND is Confidence.**

## Mobile and Adaptable

The Quest MPS 3 ND Console's flexibility and versatility adapt to any setup, seamlessly integrating with your heart-lung machine.

- **30% smaller** - 16.5 in x 7 in x 18.5 in
- **44% lighter** - just 32 pounds!

Control and ease of use are provided by the adaptable positioning for the AMC - putting power in the hands of the perfusionists.

### No Water, No Risk

Mitigate your risk of M. Chimaera. The Quest MPS 3 ND System's disposable water circuit design removes water residue from the console.

### Auto Start

Evolved technology for smarter myocardial protection. A one-touch button allows for a fast aortic valve closure, commanding a rapid arrest, while maximizing cardioplegia distribution.

### Internal Battery

With the Quest MPS 3 ND System, you no longer worry about a possible power surge or outage. With an all-new internal battery, you will experience seamless power regardless of external conditions.

### Power Through Precision

Know the precise drug concentrations in real time. Avoid medication errors with organized drug records.

### Enhanced Drug Cartridges

New safety features and increased capacity ensure patient safety. Experience a reduced need to refill on longer procedures and all-blood, single-dose strategies.

### Real-Time Data Collection

The ability to collect and review data and analytics at any time throughout or after a procedure.

### Active-Monitoring Controller (AMC)

The AMC is a well-organized, visually opulent command center for the perfusionist. Control flow rate, monitor doses, and observe patient activity to stay ahead of critical moments.



# No Disinfection\*

Mitigate your risk of *M. chimaera*. **ND**

The **Quest MPS<sup>®</sup>3 ND** System, a revolutionary development from Quest Medical, Inc., mitigates the risk and costs associated with Surgical Site Infections (SSI) due to Mycobacterium Chimaera (*M. chimaera*).

## Benefits of ND Technology

A state-of-the-art disposable water circuit with dripless connectors:

- Removes water from the Quest MPS System used to thermoregulate your patient's cardioplegia circuit
- Mitigates risk of *M. Chimaera* aerosolization

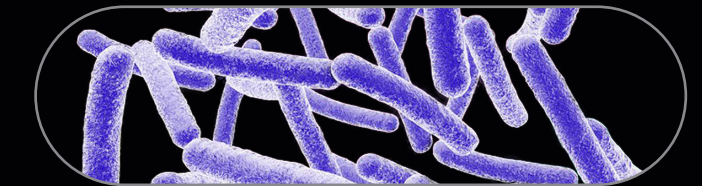
Reduce risk and eliminate cost related to the disinfection process.

## ND Technology Cost Savings:

- Average Annual Disinfection Cost - \$7,000 per unit<sup>3</sup>



## M. Chimaera



*M. chimaera* - A slow-growing bacterium, part of a group called nontuberculous mycobacterium (NTM) commonly found in water.

More than 250,000 heart bypass procedures annually are performed utilizing devices associated with these infections.<sup>4</sup>

**\$28, 219**

avg SSI cost/incident<sup>5</sup>

\* The Quest MPS3 ND System eliminates the need for disinfecting the internal water circuit. With the Quest MPS3 ND System, only exterior surfaces of the device need disinfection. Refer to the Quest MPS3 ND operations manual for exterior surface disinfection instructions.

<sup>3</sup> Disinfecting Cost, Data on File

<sup>4</sup> <https://www.cdc.gov/hai/outbreaks/heater-cooler.htm>

<sup>5</sup> Estimating the Additional Hospital Inpatient Cost and Mortality Associated With Selected Hospital-Acquired Conditions. Content last reviewed November 2017. Agency for Healthcare Research and Quality, Rockville, MD.

# Active Monitoring Controller Real-time observation. AMC

Cardioplegia delivery and cardiac activity are now visually connected with our new Active Monitoring Controller (AMC). Observe patient activity and stay ahead of critical moments.

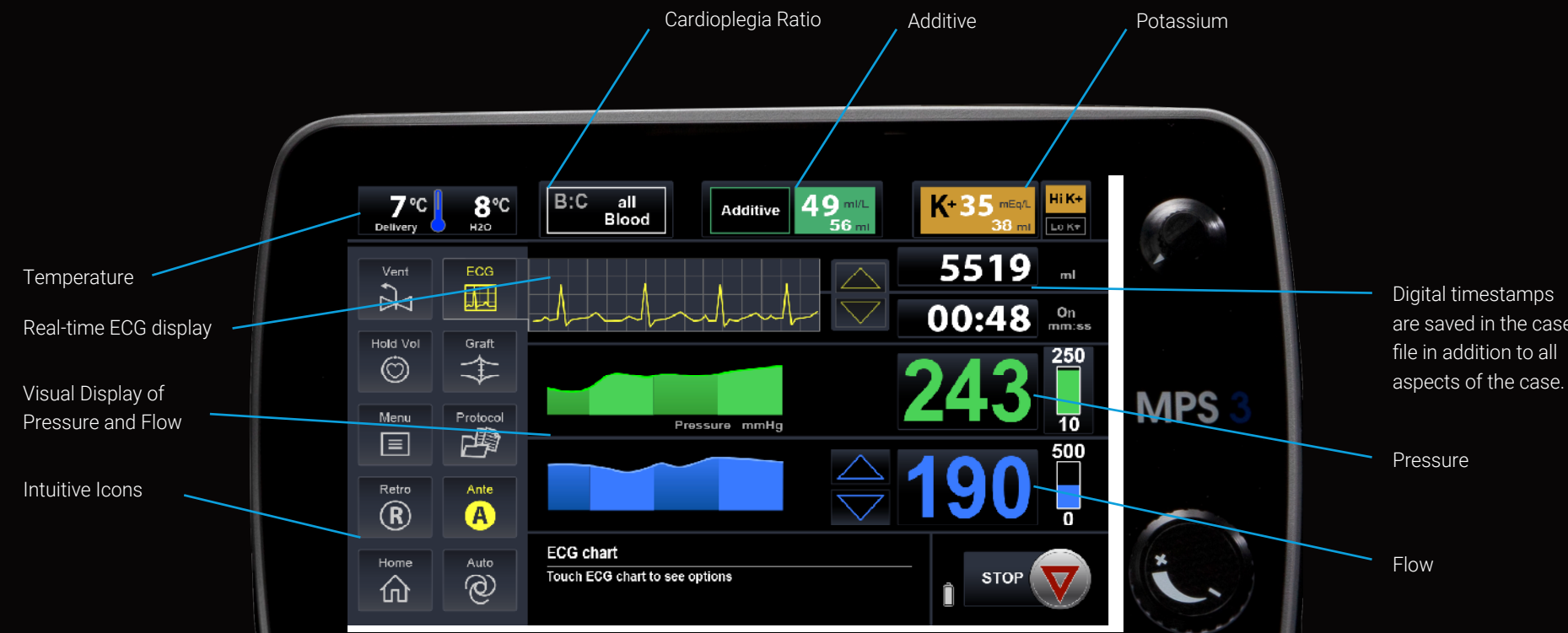
## The all-new AMC allows perfusionists to observe:

- Real-time ECG monitoring
- Critical delivery parameters
- Drug names, volumes, concentrations, and summaries
- Temperature control and displays
- Alarms and alerts for safety
- Time recordings throughout the case

## Better Patient Care

The Quest MPS 3 ND System is a powerful tool for the cardiovascular team and, with detailed data analytics, promotes better patient care.

The AMC is a well-organized, visually opulent command center for the perfusionist.



## Utilizing the Data

Download core data and easily utilize by converting it into spreadsheet format for analysis.

## Ease of Use

- Create up to 64 custom protocols
- Streamline case setup: all saved protocols are available at a touch of a button
- A master file is created and can be transferred to all other Quest MPS 3 ND System controllers: Protocols can easily be updated, keeping the whole fleet current

## Knowledge is Power

Imagine the possibilities of training and education provided by Quest's data analytics.

Review individual case logs for drug distribution and usage, and digital case files to assist with budget management.

# Confidence in Safety

## Microplegia™

The Quest Strategy for Confident Myocardial Protection

Microplegia is the pure blood initiative, a whole-blood alternative to traditional blood-crystalloid cardioplegia. It provides superior myocardial protection without hemodilution, using the patient's own blood as the most physiologic buffer, and lowers transfusion rates.

Pure blood is infused with specific drugs to arrest and optimally protect the heart.<sup>1</sup>

## MPS 3 ND Specific Drug Cartridges

Designed for safety and ease of use.

- Reduce the need to refill during longer cases and all-blood, single-dose strategies with new, larger drug cartridges – 75mL capacity
- Visually manage independent drug delivery through translucent cartridges with mL markers and color-coded LED lighting
- Volume accuracy and delivery precision are now at your fingertips
- Cartridge securement ensures proper placement onto arrest and additive pumps where sensors interface with the Active Monitoring Controller (AMC)
- Drug cartridges can be pre-filled and offer a refilling port if necessary during a case

Safeguard patient safety and prevent accidental connections with a new, non-standard luer\* on the arrest cartridge.



# Confidence in Versatility

The Quest MPS 3 ND System can accommodate:

- **ANY** Ratio
- **ANY** Strategy
- **ANY** Methodology
- **ANY TIME**

## Microplegia

All Blood Single

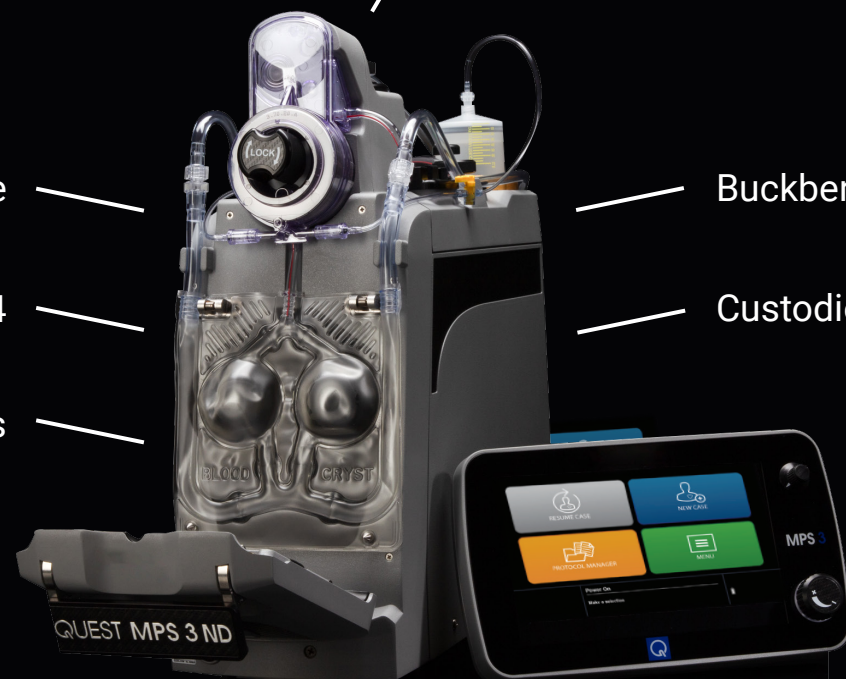
del Nido 1:4

Cold Agglutinins

Buckberg 4:1

Custodiol® (HTK)

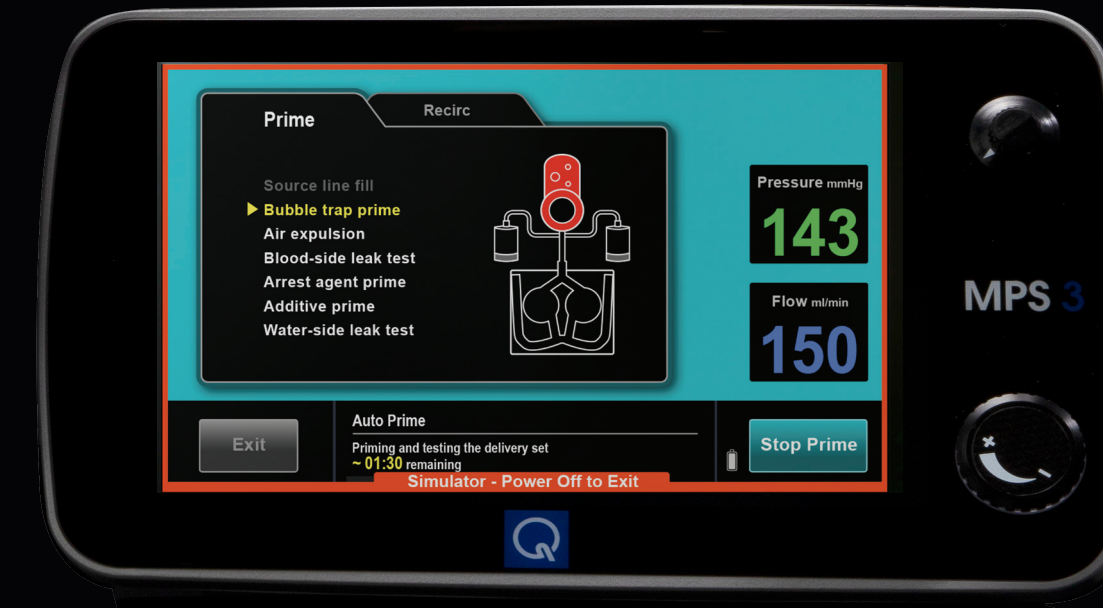
Plegisol®



All parameters are easily and quickly adjustable during the case, providing accurate and agile control

Input custom drug lists including concentration values.

Throughout the case, the Quest MPS 3 ND System actively monitors amounts delivered and saves the data in the case file for future reference.



Instructional safety alerts/alarms display on the AMC and guide the perfusionist to a quick resolution.

### Train in Safety

Each AMC has a Trainer Mode for ease of learning and case scenario simulation prior to patient use.

# Confidence in Precision

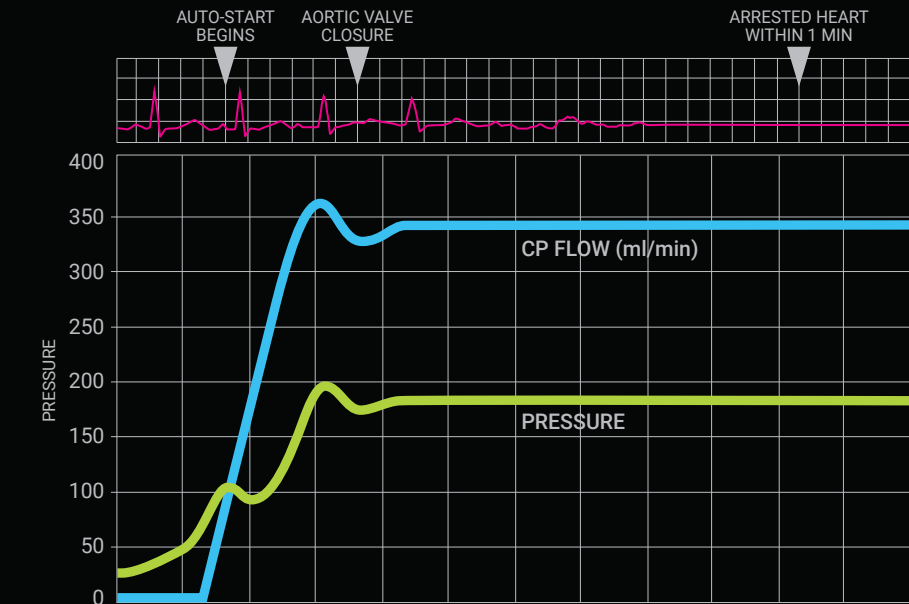


## Auto-Start and the Induction Dose

Experience the evolution of control and accuracy.

The Quest MPS3 ND System is redefining the induction dose of antegrade cardioplegia. With a touch of a button you engage the auto-start feature. Auto-start is an innovative technology for myocardial protection allowing for rapid closure of the aortic valve and commanding a faster arrest, while maximizing cardioplegia distribution and reducing time in the operating room.

**The most effective induction dose possible, with the touch of a button.**



The Quest MPS3 ND System has redefined and expanded the cross clamp timer:

- X-clamp time
- Time to arrest timer
- Arrest time timer
- Ischemic timer
- Time to rhythm



# Confidence in Precision

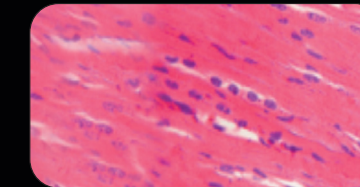
Precise drug concentrations and volumes are now available and easily managed on the new Active Monitoring Controller (AMC).

**Microplegia** is superior myocardial protection without hemodilution. Only Quest MPS Technology delivers precision microplegia by independent control of additive and arrest agents.

## Drug delivery WITHOUT hemodilution<sup>1</sup>

### Positive Benefits of Microplegia

- Provides superior myocardial protection with natural distribution.
- Maximizes aerobic environment for the myocardium
  - Reduction of hemodilution
  - Lowers blood product transfusion rates
  - Minimizes use of hemoconcentrator
  - Reduces inotropes



Myocardium<sup>3</sup>

### Power Through Precision

- Know the precise drug concentrations given to your patient in real time
- Avoid medication errors with organized drug records
- Increase patient safety with evidence-based medicine

### Real-Time Data Collection

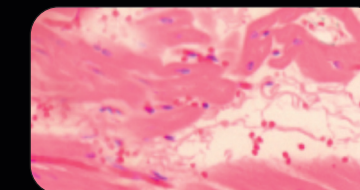
The Quest MPS 3 ND System displays and records all drug volumes and quantities in real time. The agility of the system allows for changes any time during the procedure. The console and freestanding controller work in unison to provide accurate and safe delivery of arrest and additive agents, no matter which cardioplegia protocol you prefer.



## DILUTED cardioplegia<sup>1</sup>

### Negative effects of excessive dilution

- Traditional 4:1 (Blood:Crystalloid)
- Tissue edema
  - Lower hematocrit
  - Increased blood product transfusions
  - Increased potassium levels
  - Elevated glucose levels
  - Low cardiac output syndrome<sup>7</sup>



Interstitial Edema<sup>3</sup>

# The Sound Investment

The Quest MPS 3 ND System is an investment to benefit both patients and hospitals through advanced technology.

## Mitigate risk and cost associated with Mycobacterium Chimaera

Save an average of \$7,000 per unit<sup>3</sup> on annual disinfection costs and an average \$29,219 per SSI incident related to M. Chimaera.

## Improved Patient Outcomes<sup>2</sup>

Reduce hospital length of stay, adverse events, medication costs, and transfusions associated with edema for a faster recovery.

## Patient Safety

The Quest MPS 3 ND System is the most versatile platform for cardioplegia delivery in the safest manner possible.

## Data

Clinical data supports evidence-based medicine and improving patient outcomes.

## Reduce pharmacy and hospital costs<sup>2</sup>

Eliminate the cost associated with all crystalloid cardioplegia bags.

The Quest MPS 3 ND System is more than a capital expenditure – it's an investment benefiting your community.

Contact us to set up a free demonstration.

☎ 1.800.627.0226

✉ MPS3@questmedical.com

🌐 QuestMPS3.com



## REFERENCES

1 Bharat Datt, CCP, et al. Blood Only Cardioplegia with Quest MPS. Canadian Perfusion Canadienne 2009; 19(1) April: 31-37

2 Marc W Gerdisch, et al. Clinicaand economic benefits of advanced microplegia delivery system in cardiac surgery: evidence from 250 hospitals. Journal of Comparative Effectiveness Research 2018; April: 673-683

3 Disinfecting Cost, Data on File

4 <https://www.cdc.gov/hai/outbreaks/heater-cooler.html>

5 Estimating the Additional Hospital Inpatient Cost and Mortality Associated With Selected Hospital-Acquired Conditions. Content last reviewed November 2017. Agency for Healthcare Research and Quality, Rockville, MD.

6 Ulysses G McCann, et al. Whole Blood Cardioplegia (Minicardioplegia) Reduces Myocardial Edema After Ischemic Injury and Cardiopulmonary Bypass. J Extra Corpor Technol 2006 Mar;38(1):14-21.

7 Algarni KD, MD, MHS, et al. Microplegia during coronary artery bypass grafting was associated with less low cardiac output syndrome: a propensity-matched comparison. Ann Thorac Surg. 2013 May;95(5):1532-8. doi: 10.1016/j.athoracsur.2012.09.056.

**“Quest MPS® Technology makes a  
good perfusionist great.”**

*-Alan Dubey, University of Massachusetts Medical Center*

Set up a free demonstration of the Quest MPS 3 ND System  
by calling customer service at **1.800.627.0226**  
or visiting **QuestMPS3.com**

**QUEST MPS® 3 ND**  
Smarter Myocardial Protection™

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