



# cardioPAT®

Extending the Reach of  
Cardiovascular Autotransfusion



**HAEMONETICS®**  
THE Blood Management Company

# Allogeneic transfusions: know the risks

**What is the cost of complications associated with allogeneic blood?**

**What are your intraoperative and postoperative transfusion rates, respectively?**

The risks and costs associated with the use of allogeneic blood are well documented. With a price up to 1,400 USD allogeneic blood is becoming more and more expensive. And because transfusions temporarily suppress the immune system, it puts patients at undue risk of infection and complications.<sup>1</sup>

The risk of transfusion-related immunomodulation (TRIM)—the temporary suppression of the immune system—increases with the number of units transfused.<sup>2,3</sup> Evidence indicates that TRIM results in increased bacterial and fungal infections, length of stay, and mortality.<sup>4</sup>

So, the more allogeneic blood you give a patient, the greater the risk of infection and other complications that increase length of stay and mortality (Figure 1).<sup>5</sup>

1 Leal-Noval et al. *Chest* 2001;119:1461-1468

2 Blumberg N, Heal JM. Immunomodulation by Transfusion in: *Perioperative Transfusion Medicine*, 2006, eds. Spiess, Spence, Shander; pp. 153-168

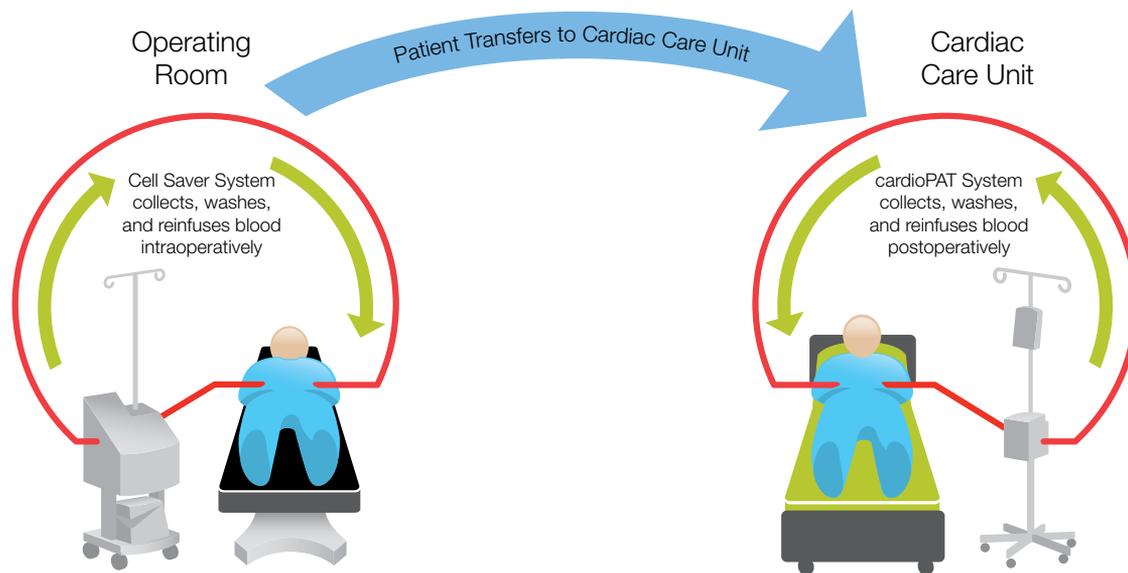
3 Carson et al. *Transfusion* 1999;39:694-700

4 Shander A et al. *Best Practice & Research Clinical Anesthesiology* 21: pp 271-289, 2007

5 Vincent et al. *JAMA* 2002 Sep 25;288(12):1499-507

# Does your blood management program fully optimize cell salvage?

Perioperative autotransfusion begins with the first incision and ends when the wound drains are removed. To minimize the likelihood of unnecessary allogeneic transfusions, optimal blood management programs need to collect, wash, and reinfuse a patient's blood in the operating room and cardiac care unit. Only Haemonetics designs cardiovascular autotransfusion systems for the intra- and postoperative care settings to help ensure all salvageable blood is returned to the patient.

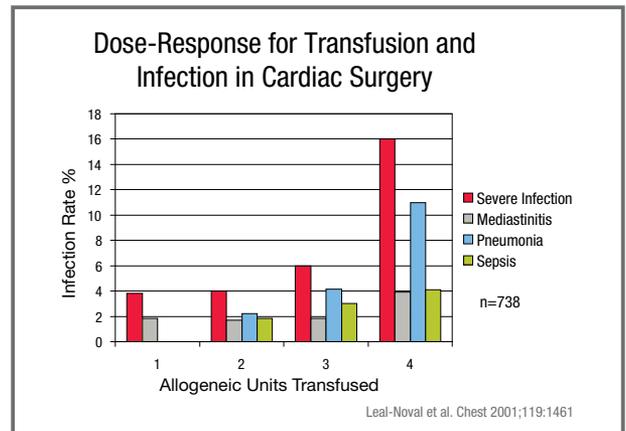


The Cell Saver® and cardioPAT® systems help you avoid unnecessary allogeneic transfusions and return fresh, high-quality blood throughout the perioperative care continuum in cardiovascular surgery

# cardioPAT: Avoiding unnecessary allogeneic transfusions after surgery

Evidence suggests that the majority of blood loss resulting from cardiovascular surgeries occurs after surgery.<sup>6,7</sup> It's not surprising then that most cardiovascular-related transfusions take place postoperatively. But the risk of TRIM, infection, length of stay, and mortality also increase with each unit of allogeneic blood transfused.<sup>8,9</sup> In fact, one study shows that allogeneic transfusion is associated with a 70% increase in mortality in CABG patients.<sup>10</sup>

Figure 1. The more allogeneic blood, the greater risk of infection



## The core of every quality blood management program

Optimal blood management programs leverage a variety of tests, medications, and techniques to avoid unnecessary allogeneic transfusions. Intraoperative and postoperative autotransfusion must be at the core of these interventions and every quality blood management program because it ensures patients receive the highest quality blood possible – their own.

6 Dalrymple-Hay et al. Cardiovasc Surg. 2001 Apr;9(2):184-7  
7 Murphy et al. Ann Thorac Surg. 2004 May;77(5):1553-9  
8 Leal-Noval et al. Chest 2001;119:1461-1468

9 Carson et al. Transfusion 1999;39:694-700  
10 Engoren et al. Chest 2002;122:1309-15

# The appropriate standard of care

In addition to providing chest drainage, the cardioPAT® Cardiovascular Perioperative Autotransfusion System collects, washes, and returns patients' blood after surgery, giving them the best chance at avoiding unnecessary allogeneic transfusions and related risks of infection. By consistently delivering fresh RBCs with hematocrit between 70–80%, you also ensure patients receive their own high-quality blood with zero chance of immunosuppression.

The cardioPAT QuickConnect Reservoir supports a cost-effective, “collect first” approach by allowing you to simply recover shed blood when you're not sure how much the patient will bleed. With the ability to attach to the processing set at any time, the QuickConnect Reservoir becomes your safety net, so you return the highest quality blood only to the patients who need it, and collect blood cost-effectively for those who don't.

The Technologies That Make the cardioPAT System the Preferred Choice	
■ Separation technology	Dynamic Disk® consistently delivers 70–80% hematocrit
■ Reservoir	Quick Connect reservoir supports the “collect only” approach
■ Partial collection and return	Processes up to 2 liters per hour and washes a minimum of 15ml RBCs
■ Safety alerts	LCD display provides operational and safety alerts
■ Suction	Internal suction for postop use Smart Suction Harmony optional
■ RBC bags with integrated microaggregate filter	Optional 40-micron RBC filter bag eliminates inconvenience of docking stand-alone filter
■ Battery	Rechargeable battery facilitates blood collection and data storage during patient transport

# Allogeneic blood versus perioperative autotransfusion



	Allogeneic Blood Transfusion	Intraoperative Cell Saver® 5+ System	Postoperative cardioPAT® System
■ Avoidance of unnecessary allogeneic transfusion	No	Yes	Yes
■ Types of procedures used	Intra- and postoperative cardiovascular surgery	Cardiovascular surgeries and other high blood loss procedures	Cardiovascular postop: CCU, ICU
■ Hematocrit	50–60%	50–60%	70–80%
■ Red blood cell recovery	N/A	>80% <sup>11</sup>	>80% <sup>11</sup>
■ Albumin	Present	>95% removal <sup>11</sup>	>95% removal <sup>11</sup>
■ Free hemoglobin	Present	>95% removal <sup>11</sup>	>95% removal <sup>11</sup>
■ Heparin	N/A	>95% removal <sup>11</sup>	>95% removal <sup>11</sup>
■ Increase risk of severe infection in cardiac surgery	Infection rate <sup>12</sup> 1 unit – >3% 2 units – 4% 3 units – 6% 4 units – 16%	Eliminates risk of infection and complications associated with allogeneic blood	
■ Cost	Up to \$ 1,400.- per unit fully burdened in US <sup>13</sup>	Potential cost savings by eliminating unnecessary allogeneic transfusions and the associated risks of infection and immunosuppression	

<sup>11</sup> Data on file at Haemonetics Corporation

<sup>12</sup> Leal-Noval et al. Chest 2001;119:1461-1468

<sup>13</sup> Shander A et al. Best Practice & Research Clinical Anesthesiology 21: pp 271-289, 2007

## Ordering Information

Description	List Number	Quantity per Case
■ cardioPAT System	02050-XXX	1
■ QuickConnect Reservoir	CPT-R-274	6
■ QuickConnect Processing Set	CPT-P-274	6
■ Centrifuge Insert	104515-00	1
■ Replacement RBC Bag with Integrated Microaggregate Filter, 400 mL	1200F-00	40
■ Replacement RBC Bag, 400 mL	01200-00	40
■ Replacement Waste Bag, 3 Liter	01300-00	40
■ A&A Line	00272-00	6
■ Post-Op Line	00273-00	6
■ Operator's Manual	52759-XX	1
■ Quick Reference Guide	105132-XX	1
■ Estimated Blood Loss Worksheet	101266-50	1
■ IV Pole	1600E	1

## Technical Information

■ Base unit	20.3 cm x 26.7 cm x 29.2 cm (8 in. x 10.5 in. x 11.5 in.)
■ Weight	9.2 kg (20 lbs)
■ Voltage	100 to 240 volts
■ Fuse Rating	F2.5A @ 250V
■ Operating Frequency	50 or 60 Hz
■ Power Cord Length	4.5 m (15 ft)
■ Battery	30-minute Rechargeable Nickel Metal Hydride
■ Certifications	ETL listed
■ Mounts onto Standard IV Pole	
■ Processes up to 2 Liters of Fluid per Hour	

**Austria**  
0800 29 2777

**Belgium and  
Luxembourg**  
(FR): 0800 754 80  
(NL): 0800 754 82

**Czech Republic**  
800 143 243

**Denmark**  
8088 7112

**France**  
0800 90 11 58

**Germany**  
0800 180 8890

**Italy**  
800 870 200

**Norway**  
800 18 453

**Sweden**  
020 797 150

**Switzerland**  
0800 898 898

**The Netherlands**  
0800 0222 707

**United Kingdom**  
0808 2344817 or  
0808 101 1375

**EUROPEAN HEADQUARTERS**

Haemonetics S.A.  
Signy Centre  
Rue des Fléchères  
P.O. Box 262  
1274 SIGNY Centre  
Switzerland

[www.haemonetics.com](http://www.haemonetics.com)

