



Treating patients for cardiac disorders is a discipline that requires **great sensitivity** towards patient recovery

While many factors influence the patient's recovery after cardiac surgery, experts agree that a **functioning drainage** is vital in preventing post-operative complications and reducing length of stay.

Complications after cardiac surgery



The incidence of bleeding in the post-operative cardiac surgery period can be

up to 52.9%

Lopes et al. Eur J Cardiovasc Nurs. 2016 Apr;15(3):e70-7.

Excessive **bleeding** is a complication that can lead to serious post-operative events, including **sepsis, acute respiratory distress syndrome, renal failure, and death.**



Christensen et al. J Thorac Cardiovasc Surg 2009; 138:687-93.



Undrained mediastinal blood causes inflammatory processes and may therefore contribute to post-operative atrial fibrillation (POAF) – risk is highest in the **first 48 hours after surgery.**

St-Onge et al. Ann Thorac Surg 2018;105:321-8.

Post operative atrial fibrillation has been linked to **longer hospital stays** and to **increased readmissions** and deaths during recovery after surgery.

Boyle et al. Innovations 2015;10:296-303

Drainage management

Current drainage management protocols in cardiac surgery aim for an early and **uninterrupted application of drainage** – from the OR to the ICU ward¹.



¹ Barozzi et al. 64th European Society for Cardiovascular and Endovascular Surgery (ESCVS); 2015; 56, Supplement 1 No 2.

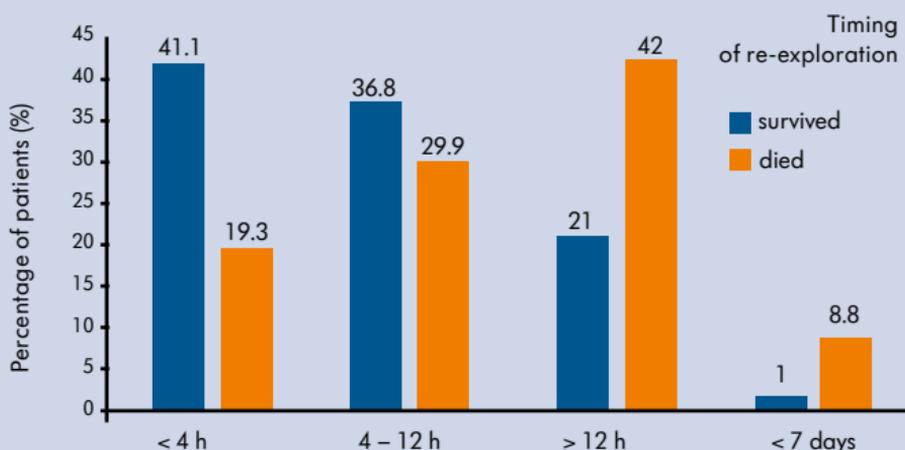
Uninterrupted drainage

Wall suction can interrupt steady drainage!

For example, during patient transport

Timing is essential

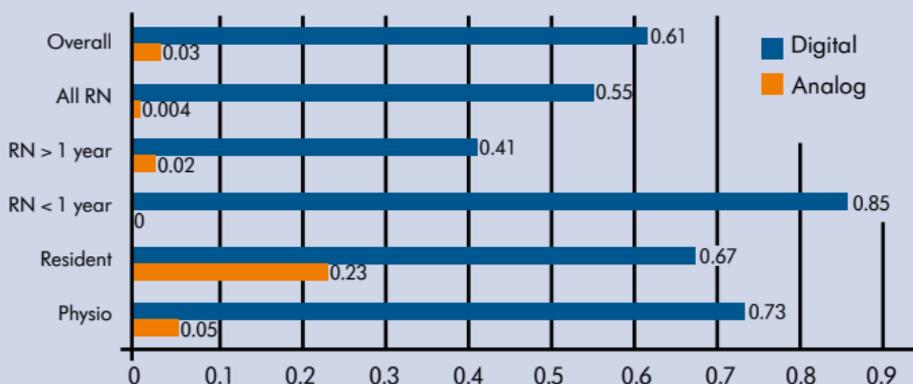
The longer the delay in re-exploration for bleeding after cardiac surgery, the higher the mortality of patients¹.



Reduce the delay

Digital drainage

- provides objective information to determine the need for re-exploration or chest tube removal
- improves communication between staff allowing a more accurate assessment for a timely decision²
- has alarm functions that provide immediate alerts when intervention is required
- is recommended in the guidelines for enhanced recovery after lung surgery³



Level of interobserver agreement (0=change agreement, 1=perfect agreement).

RN: registered nurse; Physio: physiotherapist

¹ Canádyová et al. *Interact Cardiovasc Thorac Surg* 2012; 14:704-8.

² McGuire et al. *Interact Cardiovasc Thorac Surg* 2015:1-5.

³ Batchelor et al. *Eur J Cardiothorac Surg* 2019; 55:91-115.

Off the wall



Prof. Theodor Fischlein

Professor of cardiac surgery,
University Hospital Nuremberg, Germany

Experts, such as Prof. Fischlein, agree: drainage should be functional as soon as the thorax is closed.

This golden first hour is the critical phase.

But many systems cannot guarantee fast and reliable application of drainage because they require a wall vacuum.

Do We Still Need Wall Suction for Chest Drainage?

In this abstract Barozzi et al. come to the conclusion that a major advantage of using modern electronic drainage systems is their provision of uninterrupted drainage, from the OR to chest tube removal.

Furthermore, no patient in their study group had drain-related complications (pericardial effusion, tamponade, pneumothorax).

Barozzi et al. Heart, Lung and Circulation 2018;28:S502.

Over 75,000 patients have already benefited from safer care after cardiac surgery thanks to Thopaz+

Over
75,000
patients

Pleural drainage after cardiac surgery

The retention of chest tubes¹ after post-op day 1 has been described as common for patients with:

- high output or air leak
- pneumothorax
- pleural effusions

Pneumothorax could occur²

after cardiac surgery:	0.7% to 1.7%
following CABG surgery with internal mammary harvesting:	5.3%

CABG: coronary artery bypass grafting.

Pleural effusion rates vary greatly

Post CABG surgery, up to 15% of whom the occurrence range lies between **40 and 80% in cardiac patients**, up to 15% of whom need pleural drainage^{3,4}

¹ McCormick et al. *Ann Thorac Surg* 2002; 74:2161–4.

² Weissmann, *Semin Cardiothorac Vasc Anesth* 2004; 8: 185.

³ Light et al. *Am J Respir Crit Care Med* 2002; 166: 1567-1571.

⁴ Tabaie et al. *Res Cardiovasc Med* 2018;7: 10-4.

Both fluid and air leak
must be monitored to
ensure optimum
treatment
of patients
after cardiac
surgery.



Mediastinal/pericardial drainage

Chest tubes are painful for the patient after cardiac surgery. A policy of early chest drain removal limits pain sensation and simplifies nursing care, without increasing the need for secondary pleural puncture. Therefore, a policy of short drainage after cardiac surgery should be recommended¹.



Most cardiac departments aim for chest tube removal within 24 hours.

¹ Mueller et al. *European Journal of Cardio-thoracic Surgery* 2000;18:570-574.

In a prospective, randomised, single-centre study, patients treated with Thopaz+ were able to have their drains removed up to eight hours earlier, which may have a positive impact on mobilisation, reduce the time spent in ICU and reduce costs².



² Presented by Prof Walpoth at SFCTCV Paris, Dec 2018.

Thopaz+
Safer care for enhanced recovery

Benefits of Thopaz⁺

10
OF
DIGITAL
CHEST DRAINAGE

Safer Care

- I Uninterrupted drainage thanks to battery-powered system^{1,2}
- I Reduction of drainage-associated complications³
- I Digital monitoring of fluid output, air leak and pressure
- I Reduction of human error by providing notifications and alarms⁴

For Enhanced Recovery

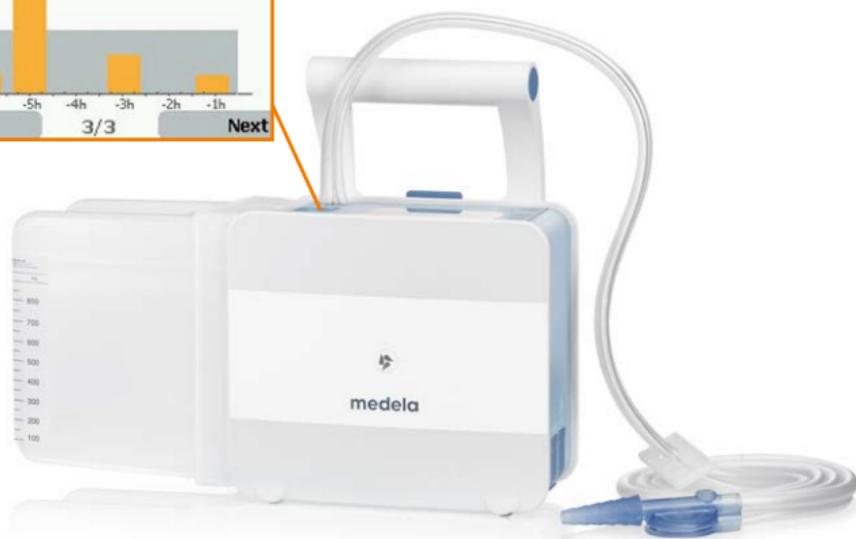
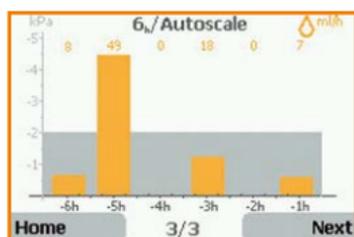
- I Early patient mobilization possible due to light, compact design²
- I Improvement of patient satisfaction due to silent function¹
- I Quicker drain removal¹

¹ Barozzi et al. presented at ACTSA 2017 Verona.

² Hofmann et al. Thorac cardiovasc Surg 2018; 66(S 01): S1-S110.

³ Van Linden et al. (2019) Publication pending.

⁴ McGuire et al. Interact Cardiovasc Thorac surg 2015; 21:403-7.



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 **Medela AG**

Lättichstrasse 4b
6340 Baar, Switzerland
www.medelahealthcare.com

Local contact

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