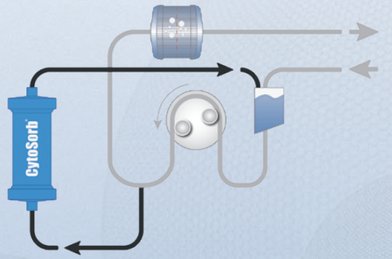
Intraoperative Initiation

Goal: Reduce risk of inflammatory activation

The intraoperative use of CytoSorb Therapy should be considered if one or more of the following aspects is given:

- Complex intervention with expected long CPB time (> 120 min)
  - Combination procedure
  - Redo procedure
- Acute, infective endocarditis requiring valve replacement
- Heart transplant surgery
- Aortic surgery with prolonged hypothermic circulatory arrest time (> 20min)
- High patient comorbidity and/or pre-existing liver/renal dysfunction
- Increased risk for the development of intra- & postoperative, hyperinflammatory based complications

CytoSorb in CPB
example of setup



Visit http://literature.cytosorb.com for an overview of all references

CytoSorbents Europe GmbH
Müggelseedamm 131
12587 Berlin | Germany

T +49 30 65 49 91 45
F +49 30 65 49 91 46
support@cytosorbents.com

CytoSorbents Switzerland GmbH
c/o MGM GmbH
Wielandstrasse 5 | 4153 Reinach BL | Switzerland

T +41 61 713 73 78
F +41 61 713 73 79
support@cytosorbents.com

CytoSorb should only be administered by personnel who have been properly trained in administration of extracorporeal therapies. CytoSorb is not available for commercial sale in USA.

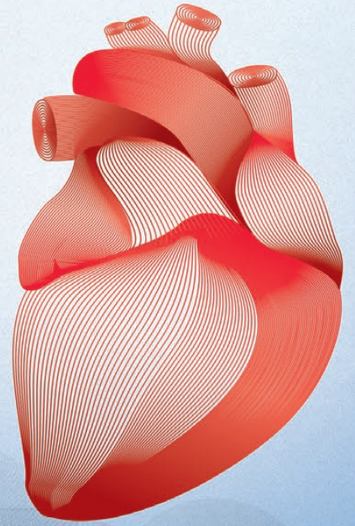
This therapy schema is non-binding and cannot replace the therapy decisions of the treating physician. The treating physician is in all cases responsible for the development and implementation of an adequate diagnostic and therapeutic plan for each individual patient.

CytoSorbents™

CytoSorb Therapy

Decision support in cardiac surgery use

- Intraoperative
- Postoperative



CytoSorb Therapy – REGAIN CONTROL

Postoperative Initiation

Postoperative ICU admission

0 hrs. | 6 hrs. | 24 hrs.

Best results achieved when CytoSorb begun within 24 hrs.

Postoperative hemodynamic instability

- Vasopressors
  NE > 0.3 µg/kg/min
- Capillary leak
  e.g. ELWI > 10 ml/kg
- Lactate further elevated/increasing
- IL-6 (> 500 pg/ml)
  PCT (> 3µg/l)
  if measured

Differentiated volume-/ catecholamine therapy

Advanced hemodynamic monitoring

Organ support (Ventilation, CRRT)

CytoSorb?
(early use in anticipation of ongoing deterioration or as continuation of intraoperative use)

Rapid stabilization

Vasopressor need rapidly declining / no longer needed

No further excessive volume requirements

Lactate levels normalizing

→ **Recovery**

Refractory septic / vasoplegic shock

No hemodynamic stabilization achieved or even further clinical deterioration

Extracorpororeal circuit indicated / available

(CRRT, Hemoperfusion, ECMO)

→ **Start CytoSorb**

Risk: MODS / Mortality

Therapeutic target: Shock reversal

Postoperative Continuation

Time since start of CytoSorb Therapy

0 hrs. | 12 hrs. | 24 hrs. | Day 2,3,...

Beginning of hemo-dynamic stabilization

Norepinephrine dose / lactate ⇓⇓

→ **Continue monitoring**

Ongoing instability

Decrease of NE dose by less than 20% in the last 12 hrs

→ **Consider new adsorber**

Sufficient stabilization

Decrease of NE dose by more than 90% from baseline

→ **End CytoSorb Therapy**

Insufficient stabilization

Decrease of NE dose by less than 90% of baseline and lactate > 2.0 mmol/l

→ **Consider new adsorber**

→ **Re-evaluate every 12 to 24 hrs.**

Ongoing (hemodynamic) instability despite 2 adsorbers in 24 hrs.

→ **Consider ending CytoSorb Therapy**

Adequate source control?

This chart is based on clinical data and best practice gained with CytoSorb 300 and not transferable to any other blood purification device