

Oxiris: The only set for 3-in-1 CRRT-Sepsis Management

UNIQUE MEMBRANE TECHNOLOGY PROVIDES 3-FOLD MODE OF ACTION¹⁷

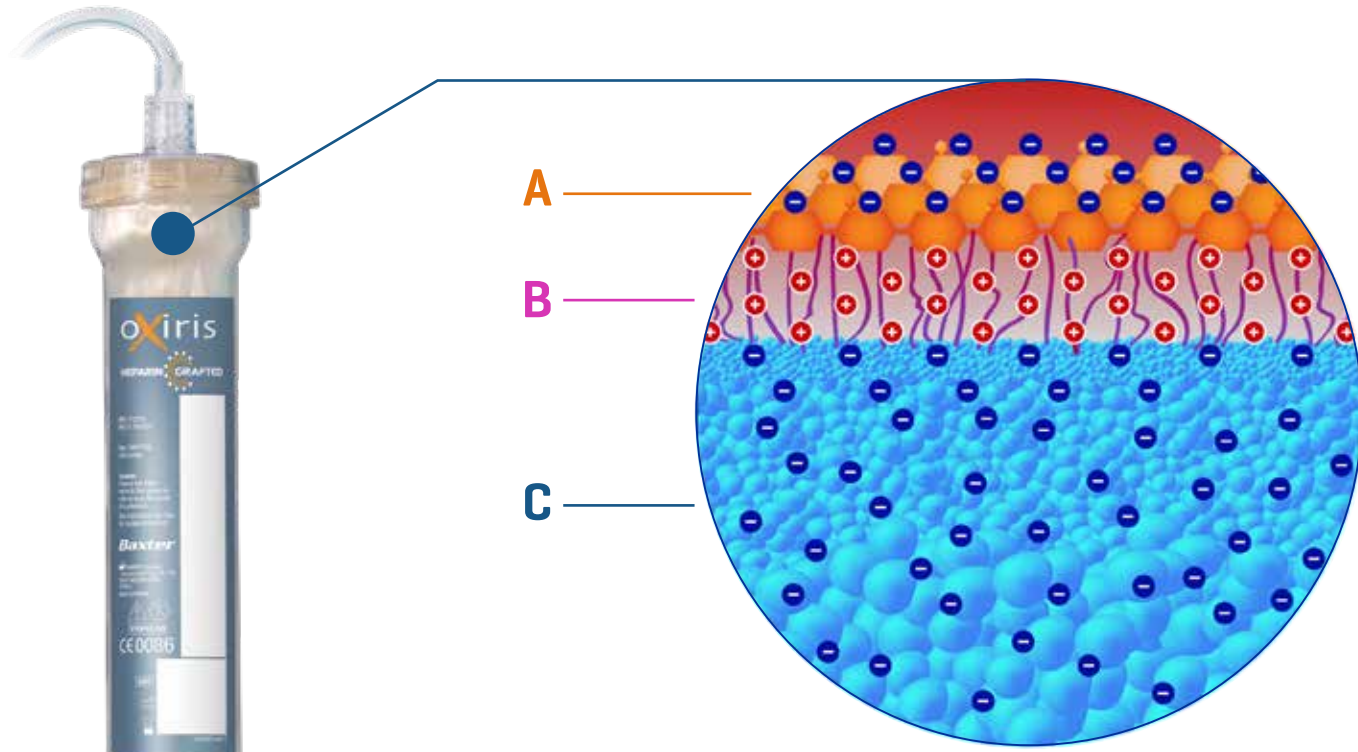


Diagram is for illustrative purposes only

A. Heparin coating: reduces membrane thrombogenicity*

B. PEI surface treatment:** adsorbs endotoxin***

C. AN69 base membrane: adsorbs cytokines and toxins while providing continuous renal support. Cytokine adsorption occurs throughout the entire membrane thickness

*Thomas, et al. AN69: Evolution of the world's first high permeability membrane. *Contrib Nephrol.* 2011;173:119-129

**PEI: PolyEthyleneimine

***Endotoxin: lipopolysaccharide complex associated with outer membrane of Gram-negative bacteria

Oxiris 3-in-1: Combines 3 functionalities in a single set to simplify CRRT-sepsis management

1. **Endotoxin removal:** Potential for improved organ function¹³⁻¹⁶ and haemodynamic stability¹³⁻¹⁵
2. **Cytokine removal:**
3. **Fluid and uremic toxin removal:** Support of renal function and fluid management in CRRT¹⁷

The association between indicators of clinical status and removal of inflammatory mediators and endotoxin is uncertain.¹³⁻¹⁵

Findings from observational studies suggest that for some patients with sepsis-induced AKI, CRRT using the Oxiris membrane may have a positive effect on organ function¹³⁻¹⁶ and haemodynamic stability.¹³⁻¹⁵

Oxiris 3-in-1: Designed to simplify CRRT-Sepsis Management



CRRT and sepsis management using a single device

- One filter for both cytokine and endotoxin removal while simultaneously supporting renal function and fluid management¹⁷

No change to CRRT set up and delivery — reduces need for additional staff training

- Use with familiar Prismaflex and PrisMax systems with the same setup as traditional CRRT¹⁷
- No additional equipment required for removal of inflammatory mediators^{17,23}

Potential to reduce workload

- Heparin-grafted membrane may help to provide clinically acceptable filter life¹⁶ with potential to minimise treatment interruptions¹⁹ and support adequate dialysis dose delivery²⁰



Oxiris 3-in-1: By combining multiple features and functions into a single device, the Oxiris set may help you improve treatment efficiency and clinical parameters¹³⁻¹⁶ for your patients requiring CRRT-Sepsis Management

Note: For safe and proper use refer to the Oxiris Instructions for use (IFU)¹⁷

(a) Toraymyxin (PMX) is an extracorporeal haemoperfusion cartridge intended for the selective removal of endotoxin from circulating blood through direct hemoperfusion (DHP).²¹

(b) The CytoSorb device is designed to remove cytokines. The CytoSorb device is indicated for use in conditions where excessive cytokine levels exist.²²

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Baxter

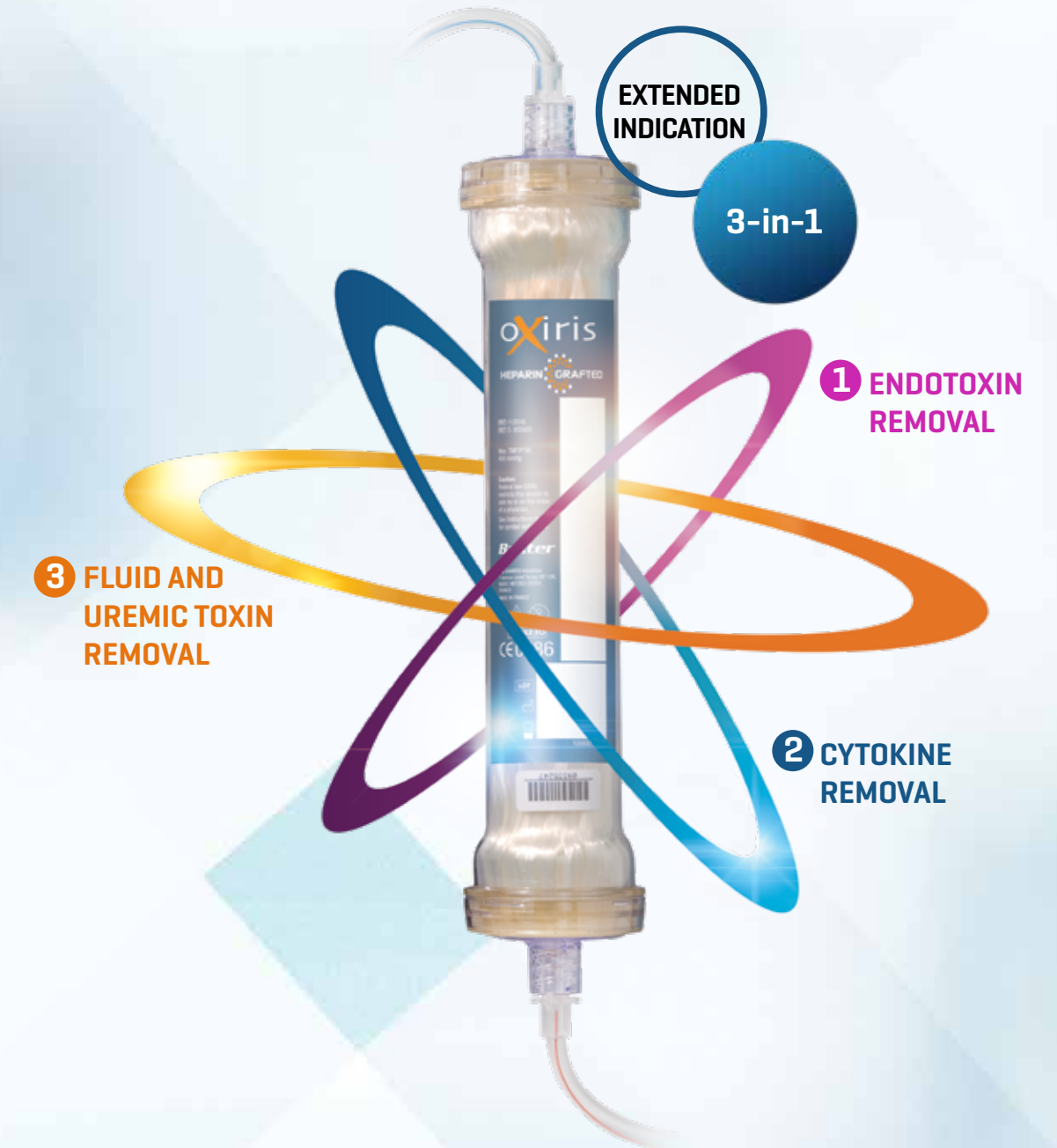
Oxiris

CYTOKINE - ENDOTOXIN AND
CRRT HEMOFILTER

Oxiris

THE ONLY SET FOR 3-IN-1
CRRT-SEPSIS MANAGEMENT

Blood purification beyond CRRT
by targeting cytokine and endotoxin removal



Sepsis is a major and growing global healthcare challenge¹

INCIDENCE OF SEPSIS

Approximately **10 to 40%** of ICU patients have sepsis²⁻⁴

AKI AND MULTI ORGAN FAILURE

Renal dysfunction/failure has been reported to occur in **20 to 60%** of patients with sepsis^{2,5-8}

Patients with severe sepsis had an average of **3.6 failed organs** in a 2001 survey of Dutch ICUs⁷

MORTALITY

1-year mortality of patients who have had sepsis is approximately **40 to 50%**^{6,9,10}

Observational studies of patients with sepsis or septic shock have found higher levels of specific cytokines to be associated with **increased mortality**^{11,12}

Oxiris 3-in-1: The only set that removes both cytokines and endotoxin

ENDOTOXIN REMOVAL

Adsorption for Lipopolysaccharide [LPS] by Oxiris¹⁸

LPS spiked (µg)	Toraymyxin (µg)	Oxiris (µg)
0	0	0
5	~3.5	~3.5
10	~6.5	~5.5
15	~9.5	~6.5

- Efficient removal of endotoxin with the **Oxiris** set according to in vitro benchmark studies¹⁸
- The **Oxiris** membrane has strong endotoxin adsorptive capacity¹⁸

CYTOKINE REMOVAL

Adsorption profile for Monocyte Chemoattractant Protein-1 [MCP-1]¹⁸

Time (min)	Control tubing (pg/ml)	Toraymyxin (pg/ml)	Oxiris (pg/ml)	CytoSorb (pg/ml)
0	~4000	~4000	~4000	~4000
10	~3800	~3800	~1000	~500
20	~3800	~3800	~500	~200
40	~3800	~3800	~500	~200
60	~3800	~3800	~500	~200
120	~3800	~3800	~500	~200

- Removal of cytokines by adsorption with the **Oxiris** set is similar to that achieved with the **CytoSorb** device¹⁸
- For a number of cytokines, removal was >90% with both the **Oxiris** and **CytoSorb** devices¹⁸

Oxiris 3-in-1: Potential impact on organ function and haemodynamic stability

In patients with sepsis and AKI, CRRT with the **Oxiris** set may reduce circulating levels of specific inflammatory mediators^{13-15*}

Increased mean arterial pressure following CRRT with the **Oxiris** membrane in patients with sepsis-induced AKI¹³

Treatment Stage	Mean (SD) arterial pressure (mmHg)
Before treatment	~65
After treatment	~80**

- Potential for improved organ function and haemodynamic stability as shown by reduction in SOFA score^{13, 15, 16} and increased MAP^{13, 15}

Single-arm observational study of adult patients with AKI caused by sepsis or septic shock (n = 34) who underwent CVVHDF using the **Oxiris** membrane (effluent dose 40 mL/kg/hour). Mean [SD] treatment duration was 79 [±25] hours. Following treatment, a significant increase in mean arterial pressure was observed.¹³

**p < 0.001. AKI, acute kidney injury; CVVHDF, continuous veno-venous hemodiafiltration; SD, standard deviation.

The association between indicators of clinical status and removal of inflammatory mediators and endotoxin is uncertain.¹³⁻¹⁵

* Findings from observational studies suggest that for some patients with sepsis-induced AKI, CRRT using the **Oxiris** membrane may have a positive effect on organ function and haemodynamic stability.¹³⁻¹⁵

Findings from preclinical, single-arm, and small observational studies have not been confirmed in larger, well-designed observational studies or randomized controlled trials. Some data are preliminary and have not been peer reviewed.

Oxiris 3-in-1: The removal of cytokines and endotoxin may be a therapeutic target for critically ill patients requiring sepsis management with or without CRRT

Oxiris 3-in-1: Unlike **Toraymyxin**^(a) and **CytoSorb**^(b) devices, **Oxiris** is the only set that achieves significant removal of both endotoxin and cytokines¹⁸

Oxiris 3-in-1: Potential improvements in organ function following CRRT with the **Oxiris** set in patients with sepsis-induced AKI have been reported in observational studies¹³⁻¹⁶