

IV Filtration

In-line filtration significantly reduces risk of particulate caused SIRS!



IV Accessories

Prevention is the best protection

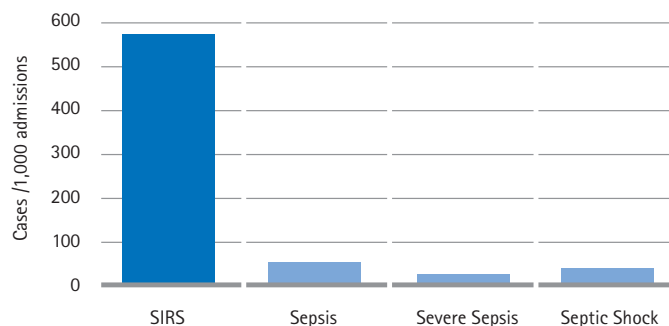
As you may know:

- 46 % of the incidents on the ICU happen during infusion therapy.¹⁾
- ICU patients cope on average with 10 million microparticles/day, coming from changing the infusion container and reactions of the various administered drugs.²⁾
- The increasing use of parenteral therapy leads to increasing risk during application.
- In connection with the etiology of SIRS (Systemic Inflammatory Response Syndrome) the aspect of particles entering the patient as a result of incompatibility reactions, abrasion or breaking glass ampoules should not be underestimated.

Please note:

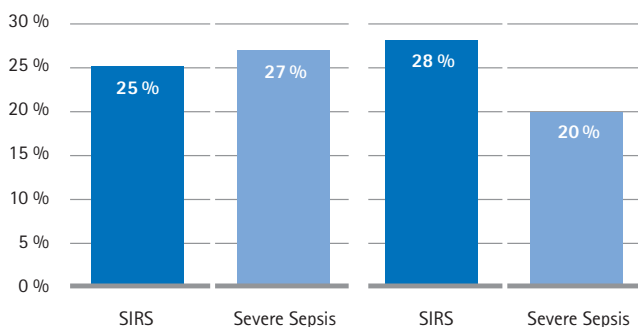
- Experts plead for additional safety standards for infusion therapy.
- The higher the safety requirements for a modern infusion regime are, the better complications and risks on the intensive care units can be reduced, the course of disease alleviated and thus costs saved.
- In-line filtration significantly reduces the risk of SIRS.³⁾

The occurrence of SIRS is a common phenomenon on the intensive care units. ^{4) 5) 6) 7) 8)}

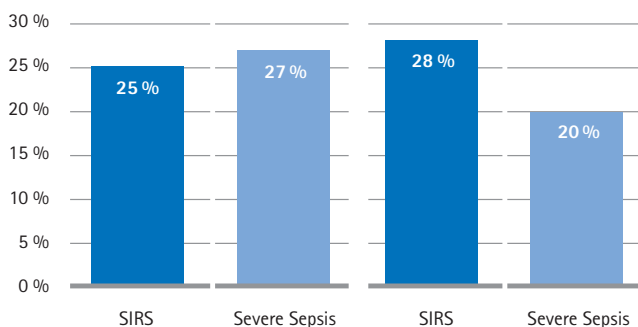


cited from 5) Salvo et al.

ICU mortality



ICU prevalence



An Australian study showed that SIRS comes along with a similar mortality rate as Severe Sepsis (25 % vs. 27 %) but is considerably more common on the ICU (28 % vs. 20 %) ⁹⁾

Prominent risks of particulate contamination

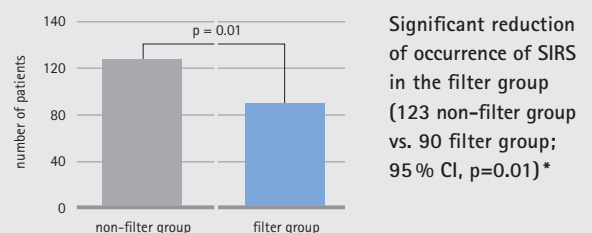
- impairment of microcirculation
 - blockages of blood vessels
 - damage of various organs
 - phlebitis
- Apart of harming patients this leads to additional treatment costs as well as extended duration of hospital stays.

Randomized, prospective study of the use of in-line filtration on the reduction of complication rate in critically ill children.³⁾

Results

- SIRS increases length of stay, SIRS and sepsis at the same time are aggravating length of stay considerably.
- The use of filters reduces SIRS and overall complication rate significantly.
- Reduction of length of stay by 23 % and duration of mechanical ventilation by 21 % when using filters.
- Shortened length of stay relevantly affects workload and economy of the ICU:
 - Increase of capacity of surgical procedures
 - Increase of flexibility in bed capacity utilization
- As the test group included adolescents up to the age of 18 years, the results can be referred to adults, too.
- An optimized infusion management requires a thorough instruction of the hospital staff and adequate standards for the infusion technique and application system.

Significant reduction of occurrence of SIRS



Significant reduction of occurrence of SIRS in the filter group (123 non-filter group vs. 90 filter group; 95 % CI, p=0.01)*

* new criteria for SIRS acc. International Pediatric Sepsis Consensus Conference 2005 ¹⁰⁾¹¹⁾

IV Filter by B. Braun – the efficient protection



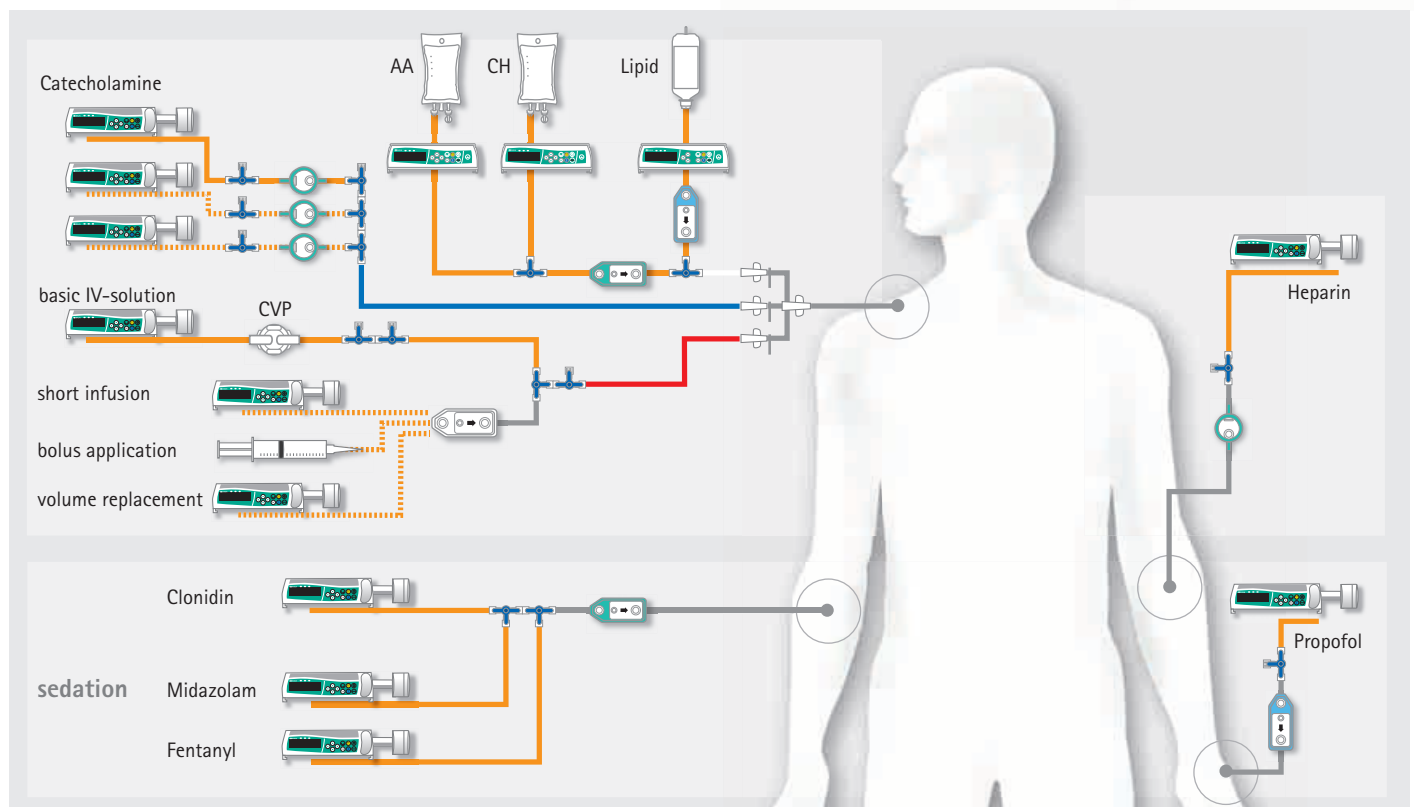
B. Braun In-line filters prevent the infusion of particles, bacteria¹²⁾, fungi, air and endotoxins* into the patient.

* in case of positively charged 0.2 µm membrane

- A complete range of IV filters for aqueous and lipid solutions.
- Different sizes to match your requirements from high flow rates on one side to low dead space on the other.
- Always the right choice for safe infusion therapy.



Typical Set-up for infusion therapy on ICU

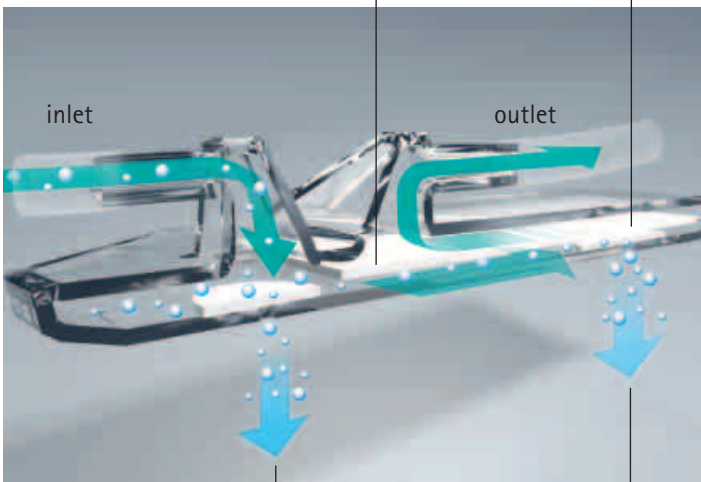


Function of Intrapur® and Sterifix® Infusion Filters

0.2 µm or 1.2 µm hydrophilic fluid filter (Polyether-sulfone membrane)

In case of Intrapur Plus/Intrapur Paed and Intrapur Neonat: 0.2 µm, positively charged.

Physical mechanism: adsorptive separation, endotoxins with their negative surface charge can be retained, although their size is smaller than the filter pore size.



B. Braun infusion filters prevent air embolism by two 0.02 µm hydrophobic Polytetrafluoroethylene (PTFE) membranes. They allow for reliable air venting regardless of filter position during application.

User benefits:

- Retention of particles and microorganisms
- Protection from air embolism
- Detection of incompatibilities
- Less complications
- Reduction of length of stay on the ICU
- Reduction of ventilation time
- Cost saving

Detailed information for healthcare professionals

Risk Prevention in Infusion Therapy can be found in the folders "Drug Incompatibility", "Air Embolism", "Particulate Contamination" and "Microbiological Contamination".



Product	Pore size	Filtration area (cm ²)	Flow rate (aqua dist., ml/min)	Filling volume		Tubing diameters	Max. operation pressure of Filter housing	Time of use recommended	Sales unit/ pcs.	REF
				Filter housing (ml)	total incl. tubing (ml)					
Product description	<ul style="list-style-type: none"> • Positively charged • Bacteria retention 		<ul style="list-style-type: none"> • Endotoxin retention • Fungi retention 	<ul style="list-style-type: none"> • Particle retention • Air elimination 						
Intrapur® Plus	0.2 µm	10	> 30	2.4	3.46	PVC 2 x 4.1	3.1	96 h	50	4099800
Intrapur® Plus	0.2 µm	10	> 30	2.4	4.54	PUR 3 x 4.1	3.1	96 h	50	4183916
Intrapur® Paed	0.2 µm	4.5	> 10	0.7	1.19	PVC 1.2 x 2.2	3.1	96 h	50	4099753
Intrapur® Neonat	0.2 µm	1.65	> 2	0.4	0.76	PUR 1 x 2.35	5.2	96 h	50	4099451
Intrapur® Neonat	0.2 µm	1.65	> 2	0.4	0.68	PUR 1 x 2.35	5.2	96 h	50	4184386
Intrapur® Neonat	0.2 µm	1.65	> 2	0.4	0.68	PUR 1 x 2.35	5.2	96 h	100	4185226
Product description	<ul style="list-style-type: none"> • Low protein binding • Fungi retention 		<ul style="list-style-type: none"> • Particle retention • Air elimination 							
Intrapur® Lipid	1.2 µm	10	> 100	2.4	3.46	PVC 2 x 4.1	3.1	24 h	50	4099702
Intrapur® Paed Lipid	1.2 µm	4.5	> 90	0.7	0.7	no tubing	3.1	24 h	50	4093216
Intrapur® Paed Lipid	1.2 µm	4.5	> 90	0.7	1.19	PVC 1.2 x 2.2	3.1	24 h	50	4099850
Intrapur® Neonat Lipid	1.2 µm	1.65	> 30	0.4	0.76	PUR 1 x 2.35	5.2	24 h	50	4099460
Product description	<ul style="list-style-type: none"> • Low protein binding • Bacteria retention 		<ul style="list-style-type: none"> • Fungi retention • Particle retention 	<ul style="list-style-type: none"> • Air elimination 						
Sterifix®	0.2 µm	10	> 30	2.4	3.46	PVC 2 x 4.1	3.1	24 h	50	4099303
Sterifix®	0.2 µm	10	> 30	2.4	4.54	PUR 3 x 4.1	3.1	24 h	50	4184637
Sterifix® Paed	0.2 µm	4.5	> 10	0.7	0.7	no tubing	3.1	24 h	50	4099354
Sterifix® Neonat	0.2 µm	1.65	> 2	0.4	0.76	PUR 1 x 2.35	5.2	24 h	50	4099257

Literature

- Hübler M. et al., Anonymous incident reporting system 2008, Anaesthesist 2008-57:926-932
- Anonymous. Risks due to particles in infusion therapy - Experts promote use of infusion filters (Transl.: Gefahren durch Partikel in der Infusionstherapie - Experten fordern Einsatz von Infusionsfiltern). Krankenpflegejournal 2004; 42 (3-4): 97
- Jack Th. et al., In-line filtration reduces severe complications and length of stay on pediatric intensive care unit: a prospective, randomized, controlled trial, Intensive Care Medicine 2012; DOI 10.1007/s00134-012-2539-7
- Brun-Buisson C. et al. Bacteremia and severe sepsis in adults. Am J Respir Crit Care Med 1996; 154: 617-624;
- Salvo I. et al. The Italian SEPSIS study. Intensive Care Med 1995; 21: S244-S249;
- Sands K. E. et al. Epidemiology of sepsis syndrome in 8 academic medical centers. JAMA 1997; 278: 234-249;
- Brun-Buisson C. et al. Incidence, risk factors, and outcome of severe sepsis and septic shock in adults. JAMA 1995; 274: 968-974;
- Kieft H. et al. The sepsis syndrome in a Dutch university hospital. Arch Intern Med 1993; 153: 2241-2247.
- Dulhunty J. M. et al., Does severe non-infectious SIRS differ from severe sepsis?, Intensive Care Medicine 2008; 34:1654-1661
- Gebara B. M. et al., Values for systolic blood pressure. Pediatr Crit Care Med (2005) 6: 500-501
- Goldstein B. et al. IPSCC: definition for sepsis and organ dysfunction in pediatrics. Pediatr Crit Care Med (2005) 6: 2-8
- Sevick S. H. et al., Retention of Brevundimonas diminuta bacterial challenges with Pall Medical Supor air-eliminating filter devices; PALL Medical Scientific & Technical Report 2002, PN 32995