

# Theranova 400

DESIGNED FOR:

**HDx**

MEMBRANE:

**MCO** [PAES/PVP, BPA-free]

## HDx THERAPY ENABLED BY THERANOVA

The HDx therapy (expanded HD) is the next evolution in hemodialysis, as it effectively targets the removal of large middle molecules.<sup>1</sup> Indeed, many of them are linked to the development of inflammation, cardiovascular disease, and other co-morbidities in dialysis patients.<sup>2</sup> Not only can HDx therapy provide HDF performance and beyond in the removal of conventional middle and large middle molecules, it does so using regular HD workflow and infrastructure.<sup>3</sup>

The HDx therapy is enabled by the **Theranova**\* dialyzer series, featuring an innovative membrane design that combines a higher permeability than regular high-flux dialyzers with effective selectivity for large proteins.<sup>4,5</sup>

## HDF PERFORMANCE AND BEYOND, AS SIMPLE AS HD<sup>3</sup>

- Markedly greater clearances and intradialytic reduction ratios for middle molecules than regular HD – at ordinary blood flow rates
- Equivalent removal of small and conventional middle molecules to high-volume HDF – Greater removal possible for large middle molecules
- Controlled albumin removal to between 1 and 4 grams per session<sup>3</sup>
- Compatible with any HD monitor<sup>6,7</sup> and with standard dialysis

## WITH BAXTER'S LATEST DIALYZER INNOVATION, COMING CLOSER TO THE NATURAL KIDNEY<sup>4,5</sup>

- High permeability to large middle molecules
- Effective selectivity by size exclusion
- Augmented internal filtration
- Similar retention of endotoxins as other dialysis membranes of the same material<sup>8</sup>



\* Do not use **Theranova** dialyzers in HDF or HF mode

# Theranova 400 Specifications

MATERIALS	THERANOVA 400
Membrane	Medium Cut Off Polyarylethersulfone and Polyvinylpyrrolidone blend BPA-free
Potting	Polyurethane (PUR)
Housing	Polycarbonate (PC)
Gaskets	Silicone rubber (SIR)
Protection caps	Polypropylene (PP)
Sterilization	Steam (inside-out)
Sterile barrier	Tyvek

## SPECIFICATIONS

UF-Coefficient (mL/h*mmHg)*	48
KoA urea*	1482
Blood Compartment volume (mL)	91
Minimum recommended priming volume (mL)	300
Maximum TMP (mmHg)	600
Recommended Q <sub>B</sub> (mL/min)	200-600
Storage conditions	<30°C (or <86°F)
Units per box	24
Gross/net weight (g)	229/170

## MEMBRANE

Effective Membrane Area (m <sup>2</sup> )	1.7
Fiber inner diameter (µm)	180
Fiber wall thickness (µm)	35

## SIEVING COEFFICIENTS\*

Vitamin B12 (1,4 kDa)	1.0
Inulin (5,2 kDa)	1.0
β <sub>2</sub> -microglobulin (11,8 kDa)	1.0
Myoglobin (17 kDa)	0.9
Albumin (66,4 kDa)	0.008

\* According to EN 1283/ISO 8637:

- UF-Coefficient: measured with bovine blood, Hct 32%, Pct 60g/L, 37°C
- KoA urea: calculated at Q<sub>B</sub>=300 mL/min, Q<sub>D</sub>=500 mL/min, UF=0 mL/min
- Sieving coefficients: measured with human plasma, Q<sub>B</sub>=300 mL/min, UF=60 mL/min
- Clearances In-Vitro: measured at UF=0 mL/min, ±10% [±20% Cyt. C, ±30% Myo.]

CLEARANCES IN VITRO (mL/min)*	THERANOVA 400
<b>Urea (60 Da)</b> (Q <sub>B</sub> -Q <sub>D</sub> , mL/min)	
200/500	198
300/500	282
400/500	344
400/800	376
500/800	445
<b>Phosphate (95 Da)</b>	
200/500	192
300/500	261
400/500	311
400/800	345
500/800	400
<b>Creatinine (113 Da)</b>	
200/500	194
300/500	269
400/500	323
400/800	357
500/800	416
<b>Vitamin B12 (1.4 kDa)</b>	
200/500	164
300/500	207
400/500	239
400/800	267
500/800	301
<b>Inulin (5.2 kDa)</b>	
200/500	133
300/500	161
400/500	183
400/800	204
500/800	225
<b>Cytochrome C (12 kDa)</b>	
200/500	122
300/500	146
400/500	165
400/800	183
500/800	202
<b>Myoglobin (17 kDa)</b>	
200/500	104
300/500	123
400/500	137
400/800	152
500/800	166

1. Ronco C, et al. *The rise of Expanded Hemodialysis*. Blood Purif 2017; 44:1-VIII.
2. Hutchison CA, et al. *The Rationale for Expanded Hemodialysis Therapy (HDx)*. Contrib Nephrol 2017; 191:142-52.
3. Kirsch AH, et al. *Performance of hemodialysis with novel medium cut-off dialyzers*. Nephrol Dial Transpl 2017; 32(1):165-72.
4. Boschetti-de-Fierro A, et al. *MCO membranes: Enhanced Selectivity in High-Flux Class*. Scientific Reports 2015; 5:18448.
5. Zweigart C, et al. *Medium cut-off membranes – closer to the natural kidney removal function*. Int J Artif Organs 2017; 40(7):328-334.
6. Baxter. Data on file. *Theranova Limited Controlled Distribution Report*. 2016.
7. Baxter. *Theranova 400/500 Instructions For Use*. N50 648 rev 003, 2017-05-29.
8. Schepers E, Glorieux G, Elout S, et al. *Assessment of the association between increasing membrane pore size and endotoxin permeability using a novel experimental dialysis simulation set-up*. BMC Nephrology. 2018; 19:1.

For further information  
visit [hdxtheranova.com](http://hdxtheranova.com):



The products meet the applicable provisions of Annex I (Essential Requirements) and Annex II (Full quality assurance system of the Council Directive 93/42/EEC of 14 June 1993, amended by Directive 2007/47/EC)

For safe and proper use of the device, please refer to the Instructions for Use

CE 0086