



Clave™

Industry-leading needlefree IV connector technology
proven to minimize bacterial transfer and colonization

icumedical
human connections

Help enhance the safety and efficiency of infusion therapy by choosing Industry-Leading Infection Control Technology

When you choose ICU Medical needlefree IV sets and connectors with proprietary Clave technology, you get an effective barrier against bacterial transfer and colonization designed to help reduce the risk of bloodstream infections.

And since the same clinical protocol can be used throughout the hospital, you can standardize on a single connector technology wherever care is given, allowing you to minimize clinical training and in-servicing and provide enhanced patient safety throughout your facilities while optimizing your supply chain.

Warning: Clave connectors may be incompatible with some male-luer connectors including prefilled glass syringes. To avoid damage to the Clave or syringes or male luers which may result in delays of medication administration and possible serious adverse events, users should confirm mating luers or syringes have an internal diameter range of 0.062" to 0.110". Check the internal diameter of the male-luer connector of the mating syringe prior to using it to access the Clave. Products outside of these dimensional tolerances should not be used.



Help Reduce Infection Risks



Standardize Clinical Protocols



Optimize Supply of IV Consumables

Use the needlefree IV connector technology chosen by more clinicians than any other brand¹

When you choose any one of ICU Medical's needlefree IV connectors featuring Clave technology, you're in good company. Clinicians across the country choose Clave technology more than any other brand.

Minimize bacterial transfer and colonization with proven Clave needlefree connector technology^{2,3,4,5}

Intravenous therapy is essential to patient care, but accessing your patient's bloodstream may increase the risk of infection. Clave needlefree IV connector technology can be an important element in your efforts to help minimize the risk of bloodstream infections.

Standardize on a single connector technology wherever care is given

Clave technology can be used on standard central venous catheters throughout the hospital for blood draws or administration of IV medications, allowing you to minimize clinical training while enhancing patient safety by using a single, clinically-differentiated connector technology wherever care is given.

Help reduce the risk of CRBSIs by standardizing on connector technology that's proven to minimize bacterial contamination

1. Global Healthcare Exchange (GHX) Market Intelligence data. Connectors, Needleless, Parenterals, [92-100]. 2017-2019. Includes stand-alone needlefree connectors and ancillary direct access devices (two-piece, hemodialysis, non-swabable, and non-patient contact connectors excluded).
2. Ryder M, RN, PhD. Comparison of Bacterial Transfer and Biofilm Formation on Intraluminal Catheter Surfaces Among Twenty Connectors in a Clinically Simulated In Vitro Model. Presented at World Congress Vascular Access (WoCova) 2018.
3. JD Brown, HA Moss, TSJ Elliott. The potential for catheter microbial contamination from a needleless connector. *J Hosp Infect.* 1997; 36:181-189.
4. Yebenes J, Delgado M, Sauca G, Serra-Prat M, Solsona M, Almirall J, et al. Efficacy of three different valve systems of needlefree closed connectors in avoiding access of microorganisms to endovascular catheters after incorrect handling. *Crit Care Med* 2008;36: 2558-2561.
5. Bouza E, Munoz P, Lopez-Rodriguez J, et al. A needleless closed system device (Clave™) protects from intravascular catheter tip and hub colonization: a prospective randomized study. *J Hosp Infect.* 2003; 54:279-287.





Enhance patient safety with one innovative technology in the DNA of every connector

Designed to enhance patient safety, each of ICU Medical's needlefree connectors utilizes the same Clave infection control technology. Clave's straight fluid path and minimal residual volume help maximize the effectiveness of every flush.



MicroClave™ Clear

- > Clear housing to visualize connector flushing
- > Use on standard vascular catheters



Clave Neutral Connector

- > Also available with blue tint for enhanced line identification
- > Use on standard (most common) vascular catheters



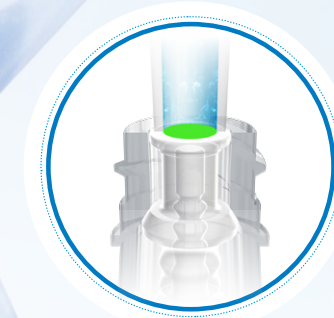
Clave™ Neutron

- > Helps reduce multiple causes of catheter reflux
- > Helps reduce catheter occlusions by as much as 50%¹⁰



NanoClave™

- > Minimizes flush volumes
- > Multiple applications, including multiport manifolds and stopcocks



Silicone Seal and Internal Cannula Minimizes Point of Entry for Bacteria

Specifically designed to minimize contact between the connector's external surface and the internal fluid path upon luer activation, Clave needlefree IV connectors minimize entry points for bacteria. Several studies have attributed this feature to a reduction in bacterial contaminants passed through the connector.^{2,3,4,5}

Split Septum

Clave's normally closed, swabbable split septum design is a preferred feature for needlefree connectors.⁷

Straight Fluid Path

Clave's straight fluid path allows for efficient clearing of medications, blood, and blood residual with low flush volumes.^{6,8}

Minimal Residual Volume

Clave's minimal residual volume allows for lower flush volumes.

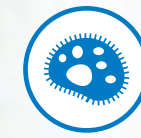
Clear Housing

A clear housing lets you see whether you have completely flushed the connector after blood draws or administration.

6. Guideline for the Prevention of Intravascular Catheter-Related Bloodstream Infections, Final Issue Review, 2011.

7. Data on file at ICU Medical. Low Volume Flush Characteristics of Unique Needlefree Connectors M1-1223 Rev. 1.

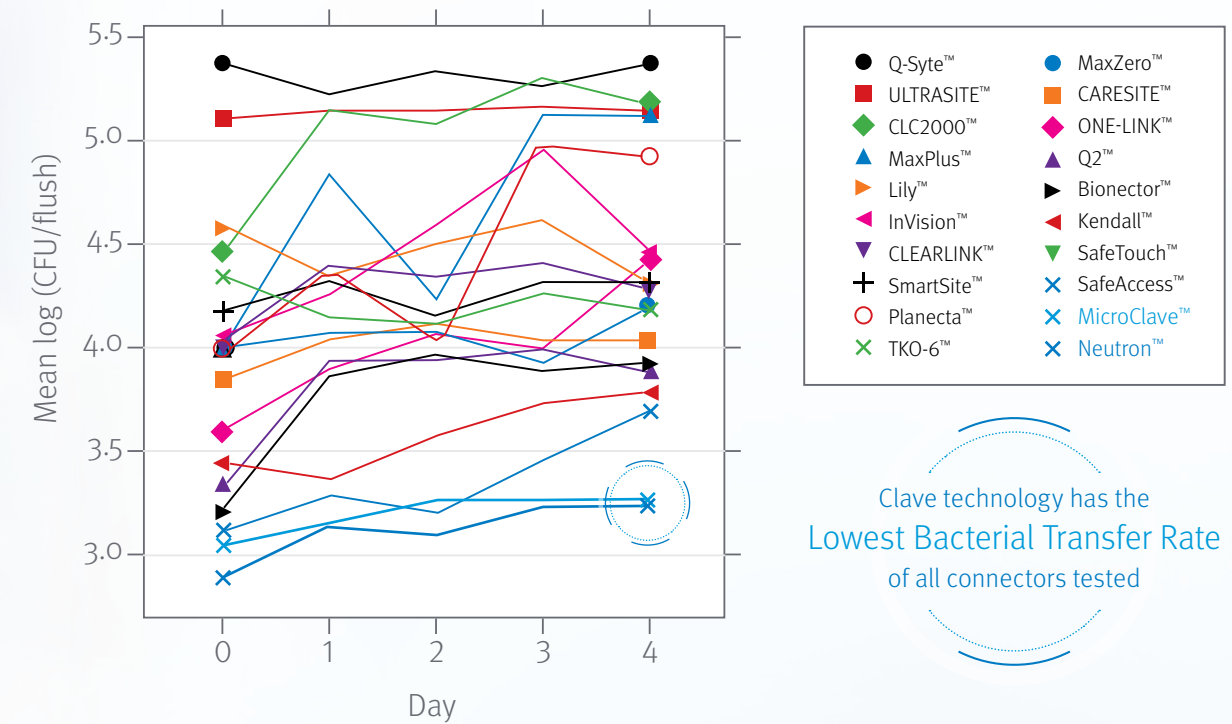
8. Breznock EM, DVM, PhD, Diplomate ACVS, Sylvia CJ, DVM, MS, BioSurg, Inc. The in vivo evaluation of the flushing efficiency of different designs of clear needlefree connectors, March 2011.



Clave helps minimize entry points for bacteria and maximize the effectiveness of each flush

In a comprehensive study comparing 20 different needlefree IV connectors, researchers reported ICU Medical's connectors featuring Clave technology were shown to have the lowest bacterial transfer rate of all connectors tested.²

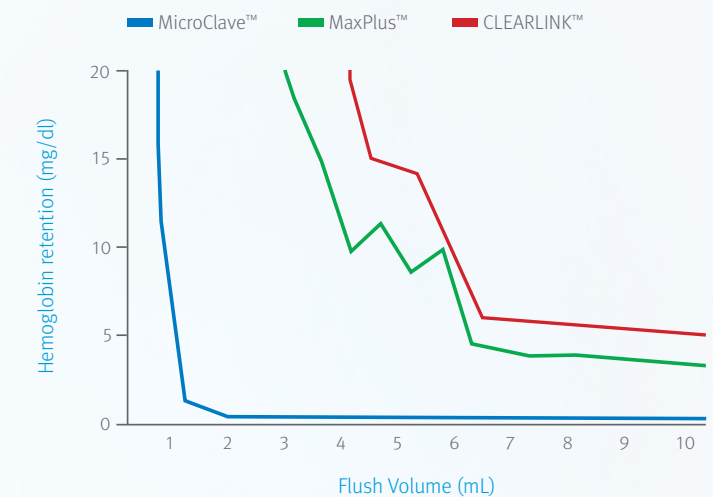
Bacterial transfer rate comparison of needlefree connectors



Clave technology has the Lowest Bacterial Transfer Rate of all connectors tested

Efficiently clear the connector with low flush volumes

- ICU Medical's Clave technology outperforms the BD MaxPlus™, and Baxter Clearlink™ connectors as determined by the total flush volume needed to clear the connectors of residual blood elements.⁸





Use a single connector technology to standardize IV therapy wherever care is given

Clave technology helps enhance patient and clinician safety by using a single, clinically-preferred connector technology throughout the hospital, so you can minimize clinical training and in-servicing while optimizing your supply chain.

General Infusions

- › Connectors and extension sets chosen by clinicians across the country more often than any other
- › Primary gravity and secondary sets featuring Clave technology

NICU & PICU

- › Closed medication sets for syringe pump delivery
- › Stopcocks and manifolds with low residual volumes

Anesthesia

- › Multiport manifolds and stopcocks for simultaneous fluid delivery
- › Procedure-ready administration, extension, and blood sets for adult and pediatric patients

Oncology

- › Connector technology that helps minimize catheter reflux in immunocompromised patients⁹

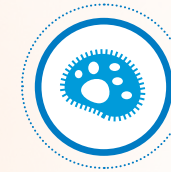


9. Dayna Holt, MSN, RN, CRNI, CPN, VA-BC, Stephanie Lawrence, RN, BSN. The Influence of a Novel Needleless Valve on Central Venous Catheter Occlusions in Pediatric Patients. Journal of the Association For Vascular Access, Dec. 2015.



MicroClave: the clear choice to visualize flushing and help reduce bloodstream infection risk

MicroClave combines clinically-differentiated Clave technology with a clear housing to help you visualize connector flushing after blood draws or administration while providing an effective microbial barrier against bacteria transfer and contamination. Ideal for a wide range of clinical applications and patient populations, MicroClave is the optimal facility-wide needlefree IV connector.



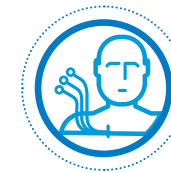
Help Reduce Risk of CRBSIs

Creates a mechanically closed system prohibiting microbial ingress to help minimize infection risks.



Visualize Connector Flushing

The clear housing of the MicroClave allows for visualization of the internal fluid path upon flushing the connector.



Use on Standard Catheters

MicroClave can be used on standard peripheral, arterial, and central venous catheters for blood draws or administration of IV medications.



No Change in Technique

By allowing a single protocol to be used throughout the hospital, MicroClave minimizes clinical training and in-servicing while enhancing patient safety.

Clave Neutral Connector comes with a blue-tinted housing for enhanced line identification

- › Blue-tinted clear housing lets you easily spot the Clave Neutral connectors on even your most complex IV sets.

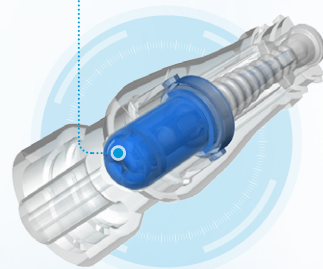




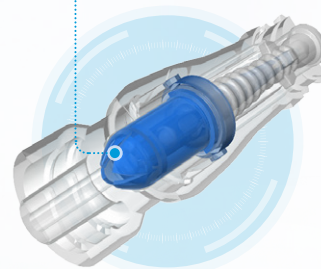
Clave Neutron: unique technology that helps reduce reflux to maintain catheter patency

Maintaining catheter patency and minimizing occlusions can be important steps in your efforts to enhance patient safety and reduce costs. Clave Neutron combines clinically differentiated Clave infection control technologies with a proprietary, bi-directional silicone valve and bellows feature to help reduce reflux. Clave Neutron helps maintain catheter patency during the times traditional connectors have been shown to occlude most often.

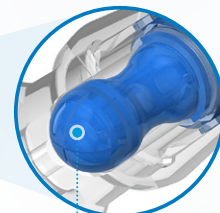
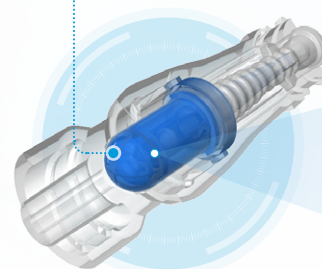
Valve during aspiration



Valve during infusion



Valve with no fluid flow



Valve during reflux challenge

Unlike other anti-reflux valves, Neutron's patented technology provides the unique ability to absorb and physically compensate for pressure variations that typically result in blood reflux into a catheter.

Clave Neutron may help you reduce catheter occlusions by

50%¹⁰

10. Observational In-Vivo Evaluation of the Neutron™ Needlefree Catheter Patency Device and its Effects on Catheter Occlusions in a Home Care Setting, 2011.



NanoClave Manifolds and Stopcocks: optimize fluid delivery while helping protect against CRBSIs

Help reduce the risk of bloodstream infections and visualize connector flushing with NanoClave. A mechanically closed system prohibits microbial ingress and provides a safe and effective microbial barrier, while a clear housing lets you visual the internal fluid path when flushing.



Maximize Patient Comfort

The small size and weight of the NanoClave make it the perfect solution for your NICU and PICU patients.



Minimize Flush Volumes

Minimal residual volume of only 0.02 mL allows for lower flush volumes which may help your efforts to maintain appropriate patient fluid balance.

Incorporating clinically-differentiated Clave technology at every connection point

Stopcock and manifold ports integrate Clave infection control technology to maintain a closed system and enhance patient safety



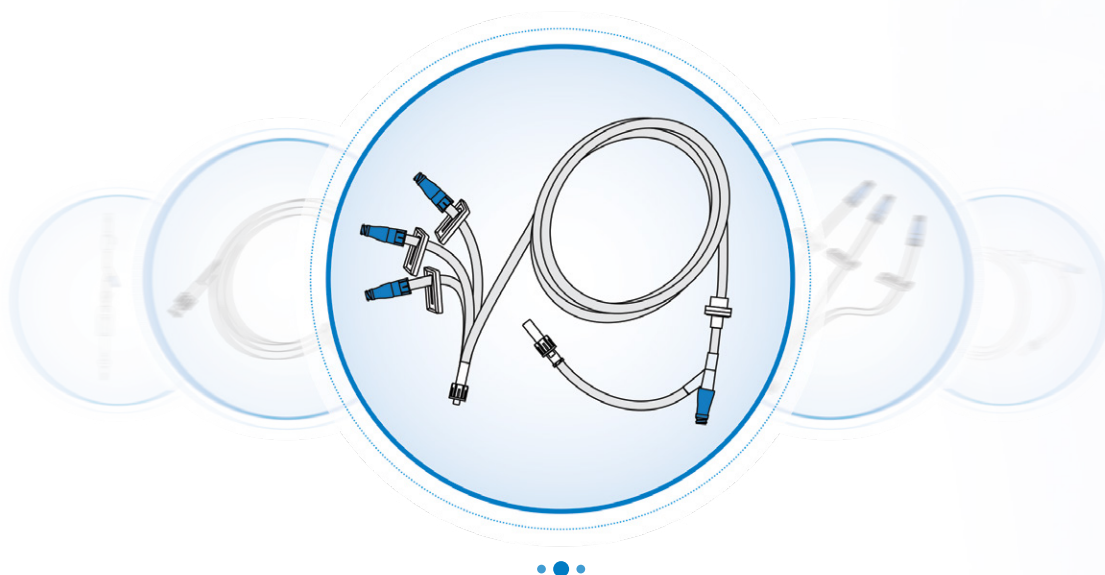


Optimize the supply of your essential IV consumables

Standardizing on ICU Medical IV consumables gives you best-in-class Clave technology and access to our full portfolio of components to optimize your supply chain across dedicated and non-dedicated sets as well as the broadest offering of off-the-shelf IV sets tailored to a range of clinical needs.

Reduce SKUs with procedure-ready sets designed to meet your specific needs

Choose from our broad portfolio to meet your specific clinical need, letting you avoid ordering multiple components while maximizing shelf space and reducing packaging waste.



Tubing Options



Choose from multiple colors, large and small bore, and specified set lengths for distinct clinical applications.

Multiple Configurations



In addition to Clave connectors, choose rotating, fixed, or slip luer connections, clamp type and placement, drip chambers, 0.2 and 1.2 micron integrated filters, and more.

Color-Coded Components



Choose from multiple color-coded component options like connector rings, IV tubing, and clamps to help reinforce your facilities' line-identification initiatives.

To learn more about ICU Medical's full line of Clave needlefree IV sets and components, please call (877) 946-7747 or visit www.icumed.com/clave



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