

Tego® Needlefree Hemodialysis Connectors Reduce Heparin Use Without Affecting Blood Flow Rate Compared to Traditional Central Venous Catheter Locks

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BACKGROUND

Ten percent of patients with a long-term central venous catheter (CVC) for chronic hemodialysis (HD) will develop a catheter-related bloodstream infection (CRBSI).¹⁻⁴ The Tego Needlefree Hemodialysis Connector developed by ICU Medical, Inc., is a neutral displacement connector designed to reduce catheter-related infections and clots associated with CVCs by alleviating the need for a heparin lock while still maintaining blood flow rates.

PURPOSE

The purpose of this clinical study was to compare the efficacy and cost efficiency of Tego connectors used with saline CVC locks to traditional heparin CVC locks, and to compare both to the costs of recombinant tissue plasminogen activator (rt-PA).

MATERIALS AND METHODS

Researchers from DaVita® Clinical Research (DCR), a provider of clinical research services focused on kidney research as well as a multitude of specialty therapeutic populations, analyzed clinical data from more than 2,500 patients (Table 1), comparing conversion from traditional CVC locks to Tego connectors. Researchers examined data gathered 90 days before and 90 days immediately following the Tego conversion, evaluating blood flow rate, heparin use, and blood culture results. From this data, a cost analysis was conducted, comparing the cost of heparin, connectors, syringes, activase, sodium citrate, and equipment for both CVC locks and Tego connectors to the cost of rt-PA.

TABLE 1

	TEGO
N	2,738
Mean age ± SD (years)	62.30 ± 16.24
% Male	46.7%
% African American	21.0%
% Hispanic	27.5%
% Asian, Pacific Islander	8.9%
% Native American	0.9%
% Caucasian	38.9%
% Other	2.8%
% Unknown	0.0%
% Diabetic	49.3%
Vintage ± SD (years)	2.93 ± 3.67
Vintage (years) Min-Max	0.25-36.72
BMI ± SD	26.86 ± 7.19

RESULTS

Blood flow rate and the rate of positive blood cultures remained unchanged over the course of the evaluation period (Table 2). In addition, total heparin use decreased nearly 2,000 units 3 months after Tego conversion (Table 2). The average 6-month cost was \$16.38 lower for Tego connectors per CVC patient compared to traditional locks, caps, heparin, and syringes per CVC patient. Both were significantly less than the rt-PA cost per patient (Table 3).

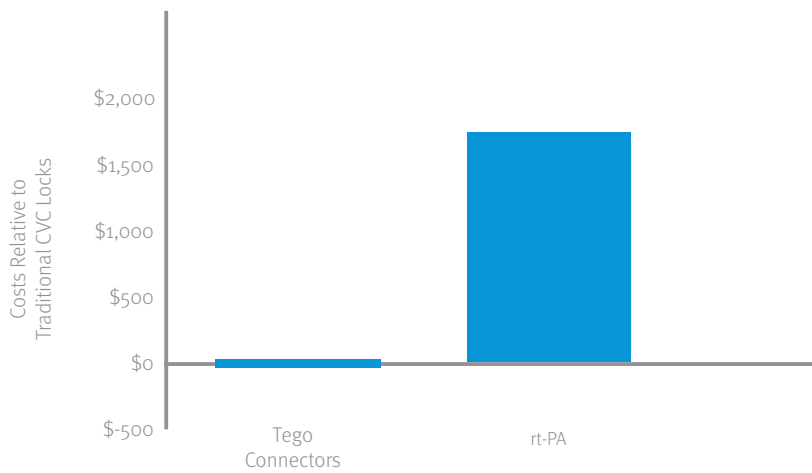
TABLE 2

Blood Flow Rate, Heparin Use, and Positive Blood Cultures (Before and After Conversion to Tego Connector)

	Days Prior to Conversion			Days After Conversion		
	90-61	60-31	30-01	01-30	31-60	61-60
# Facilities	225	230	234	234	233	232
# Patients	2,040	2,302	2,656	2,656	2,447	2,256
Blood Flow Rate (mL/min); mean ± SD	348.3 ± 41.5	348.2 ± 42.6	346.7 ± 40.3	345.4 ± 40.7	343.1 ± 41.4	341.4 ± 41.1
Run Time (minutes); mean ± SD	208.6 ± 30.7	207.5 ± 30.1	207.2 ± 28.8	207.4 ± 29.5	206.9 ± 28.6	208.1 ± 29.8
Kt/V; mean ± SD	1.5 ± 0.4	1.5 ± 0.4	1.5 ± 0.4	1.6 ± 0.4	1.6 ± 0.4	1.6 ± 0.4
Total Heparin Units / Treatment	6,177	6,782	7,799	6,692	4,933	4,250
Total Activase (mg) / Treatment	0.06	0.06	0.07	0.06	0.05	0.05
Positive Cultures per 1,000 Patient Days (Number)	1.04	0.88	1.04	0.93	0.93	0.87
Positive Blood Cultures (%)	16.30%	15.70%	17.90%	17.50%	17.10%	14.90%

TABLE 3

Relative Mean 6-Month Cost of Locks per CVC Patient



SUMMARY

Researchers showed that the use of Tego connectors decreased heparin use, resulting in lower costs per month. Blood flow rate and the rate of positive blood cultures were essentially unchanged after conversion to Tego connectors. Costs of both Tego and saline CVC locks were significantly lower than costs associated with rt-PA. This study provides evidence to support the Tego’s ability to reduce costs associated with long-term CVCs without the use of heparin CVC locks. The researchers concluded that since blood flow rate and the rate of positive blood cultures were essentially unchanged after conversion that “Tego connectors are a viable and cost-effective alternative to traditional locks.”

References

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