

BD Insyte™ Autoguard™ BC Shielded IV Catheter with Blood Control Technology

Gravity-based flow rates and infusion time

Introduction

Peripheral IV catheter flow rates vary mainly by the catheter's diameter, or gauge, and length. Flow rate information can be used as one piece of information to determine the proper catheter size and length for a particular patient and the expected therapy requirements. The BD Insyte™ Autoguard™ BC Shielded IV Catheter has the benefit of blood control technology, which reduces the risk of blood exposure during a peripheral IV catheter placement. Although the addition of the blood control technology may slightly affect the gravity-based flow rates in comparison to the BD Insyte™ Autoguard™ Shielded IV Catheter, the differences do not appear to be clinically relevant.

Methods

The flow rate test method for IV catheters is described in ISO 10555-5:1996. The test method is based on water level one meter above the patient. This is an approximation to represent a typical height of a solution hung from a pole or hook above a patient. Testing was conducted for each catheter gauge and length. Catheter flow rates can differ by brand due to small differences in the catheter tip diameter, catheter length, catheter adapter size and how far the solution is positioned above the patient. To help better describe the clinical significance of a particular catheter gauge flow rate, refer to the "Time to flow 500 mL of water" column in Table 1. This gives a sense of how long it would take to infuse half a liter of saline without the use of a pump.

Results

The flow rates for BD Insyte™ Autoguard™ BC Shielded IV Catheter with Blood Control Technology (IAG BC) in comparison to BD Insyte™ Autoguard™ Catheter (IAG) are shown in Table 1 below.

Table 1

Gauge and length	Flow rate (mL/min)		Time to flow 500 mL of water (min:sec)	
	IAG BC	IAG	IAG BC	IAG
24 G x 0.75 in.	20	20	25:00	25:00
22 G x 1.00 in.	37	35	13:31	14:17
20 G x 1.00 in.	63	65	7:56	7:42
20 G x 1.16 in.	61	60	8:12	8:20
20 G x 1.88 in.	54	55	9:16	9:05
18 G x 1.16 in.	95	105	5:16	4:46
18 G x 1.88 in.	87	95	5:45	5:16
16 G x 1.16 in.	193	220	2:35	2:16
16 G x 1.77 in.	185	205	2:42	2:25



Conclusions

The flow rates for the BD Insyte™ Autoguard™ BC Catheter are listed on the product label. On average, the BD Insyte™ Autoguard™ BC 20 G–24 G catheters flow at approximately the same rate as the BD Insyte™ Autoguard™ Catheters. The BD Insyte™ Autoguard™ Catheters 16 G–18 G catheters flow slightly faster than the BD Insyte™ Autoguard™ BC Catheters. The potential clinical significance of this difference is illustrated in Table 1, which shows the time to flow 500 mL of water for both product families. During the flow rate test, the water height is kept at a constant level to determine the flow rate, while in a clinical setting the saline height in the bag will decrease during use, thus lowering the flow rate slowly during infusion. The flow rate differences can be compensated for by raising the infusate height on the pole or by replacing with a new bag. If a more precise delivery rate is required, an infusion pump is recommended. Bench tests are not indicative of clinical outcomes.

BD, Sandy, UT, 84070, U.S.

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