Compass™ Vascular Access

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Overview

Problem: Preventable patient harm during catheterization

Every year, physicians mistakenly insert central venous catheters into an artery instead of a vein (arterial cannulation).

These complications often result in severe damage and/or death from stroke, airway compression, or hemorrhage (Guilbert).

Incidence of Arterial Cannulation without Pressure Measurement

Author	Year	Catheterizations	Arterial Cannulations n	Arterial Cannulations %	Estimated Annual Errors in US
Schwartz(3)	1979	1,021	5	0.50%	29,400
Shah(4)	1984	5,924	4	0.07%	4,200
Kron(5)	1985	903	7	0.80%	46,800
Golden(6)	1995	4,022	4	0.10%	6,000
Wicky(7)	2002	3,300	11	0.30%	19,800
Pikwer(8)	2009	1,079	11	1.00%	60,000

Solution: Prevent the problem using pressure measurement

Measuring pressure to distinguish a vein from an artery can prevent or eliminate this error.

Unfortunately, technical challenges have limited adoption of current pressure measuring techniques (Bailey).

Incidence of Arterial Cannulation with Pressure Measurement

Author	Year	Catheterizations	Arterial Cannulations n	Arterial Cannulations %	Estimated Annual Errors in US
Jobes	1983	1,284	0	0	0
Oliver	1997	1,172	0	0	0
Ezaru	2009	9,384	0	0	0

The Compass™ Vascular Access

The Compass Vascular Access is an inexpensive, single-use pressure transducer with integrated digital display designed specifically for central venous catheter insertion. The Compass VA integrates seamlessly with standard insertion techniques and enables physicians to simultaneously view their hands, the patient, and the pressure without additional cabling, operators, or connections.

The Compass is not yet commercially available for sale and subject to FDA review and 510(k) clearance.

M. C. Guilbert et al., J Vasc Surg 48, 918-25; discussion 925 (Oct, 2008).
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K. B. Shah, T. L. Rao, S. Laughlin, A. A. El-Etr, Anesthesiology 61, 271-5 (Sep, 1984).
I. L. Kron, A. W. Joob, C. L. Lake, S. P. Nolan, Ann Thorac Surg 39, 223-4 (Mar, 1985).
L. R. Golden, J Cardiothorac Vasc Anesth 9, 425-8 (Aug, 1995).
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S. Wicky et al., Eur Radiol 12, 901-7 (Apr, 2002).
D. R. Jobes, A. J. Schwartz, D. E. Greenhow, L. W. Stephenson, N. Ellison, Anesthesiology 59, 353-5 (Oct, 1983).
W. C. Oliver, Jr. et al., J Cardiothorac Vasc Anesth 11, 851-5 (Dec, 1997).
C. S. Ezaru, M. P. Mangione, T. M. Oravitz, J. W. Ibinson, R. J. Bjerke, Anesth Analg 109, 130-4 (Jul, 2009).
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Compass™ Vascular Access

The first pressure measurement device designed specifically for use during the insertion of central venous catheters.

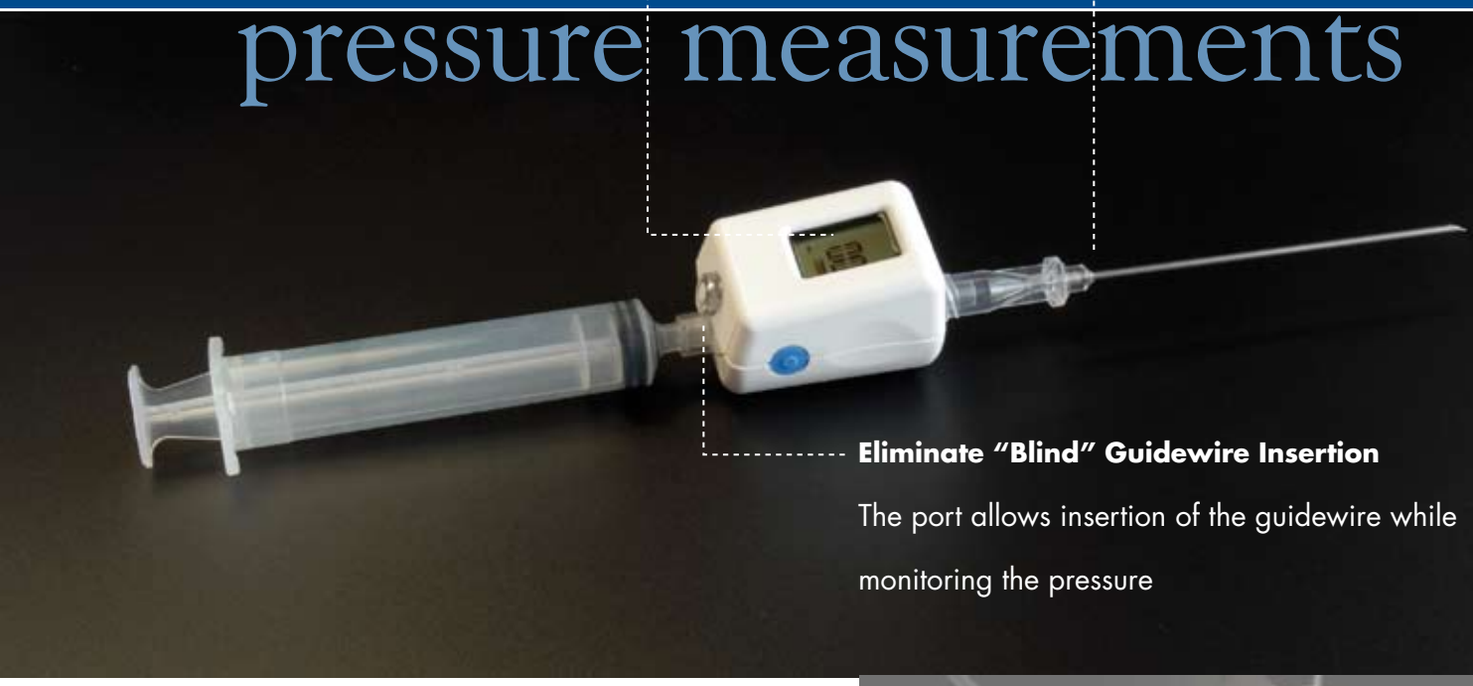
Focus on the Procedural Site

View your hands, the patient and the pressure without additional cabling, operators or connections

Integrate Seamlessly with Needles and Syringes

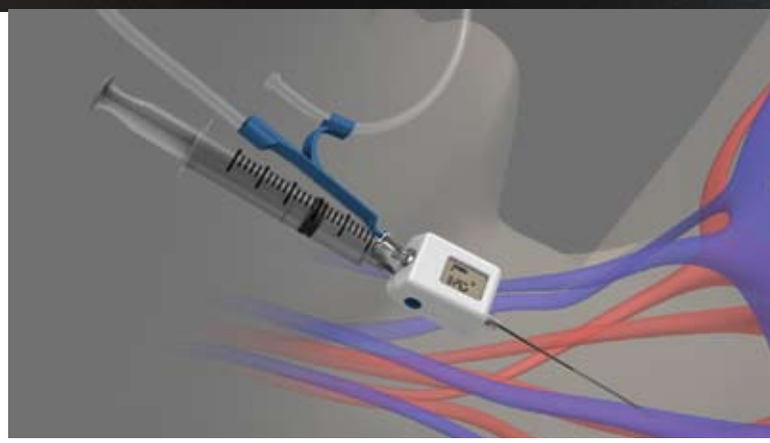
Easily incorporated into the Seldinger technique for inserting catheters

pressure measurements



Eliminate "Blind" Guidewire Insertion

The port allows insertion of the guidewire while monitoring the pressure



Follow Emerging Safety Guidlines

The IHI* and AHRQ* provide central line checklists that include measurement of venous pressure to avoid arterial placement of the catheter.

IHI: Institute for Healthcare Improvement (http://www.ihi.org)
AHRQ: Agency for Healthcare Research and Quality (http://www.ahrq.gov/qual/clichklist.htm)

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Compass™ Vascular Access: Specifications

Blood channel:

Clear USP Class VI polycarbonate for rapid visualization of blood flash

Display:

Film-compensated super twisted nematic LCD for high contrast

Guidewire Port:

Allows insertion of 0.025–0.038″ guidewires while continuously monitoring pressure

Female Luer Connector:

Connects to commercially available syringes

Power Button:

Turns device on/off and calibrates

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Male Luer Connector:

Fits standard needles and catheters

Pressure Range	-199 to +199 mm Hg
Accuracy	± 2mm Hg below 50mm Hg
	± 5mm Hg above 50mm Hg
Zero Drift	± 1mm Hg per 4 hours
Operating Life	> 8 hours
Operating Temperature	15 to 40° C (32-104° F)
Storage Temperature	-29 to 49° C (-20-120° F)
Light Sensitivity	<1mm Hg
Lithium Battery Voltage	3 Volts

Pressure Bars:

Pressure displayed as waveform to emphasize physiological pulsations

Average Pressure:

For rapid and quantitative pressure measurement

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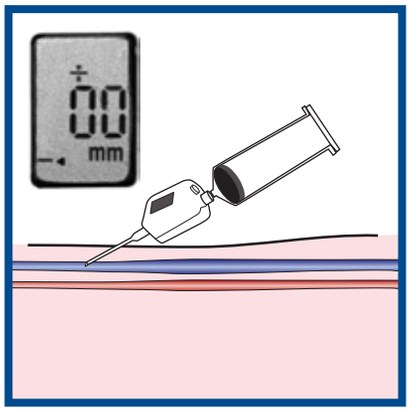
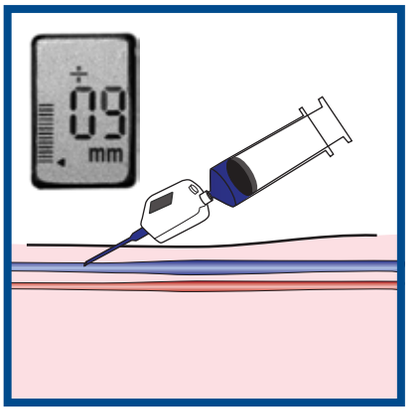
Compass™ Vascular Access:

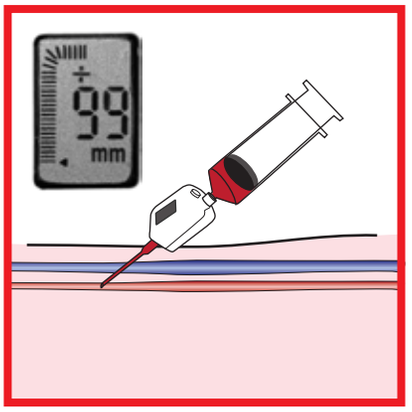
Product Use



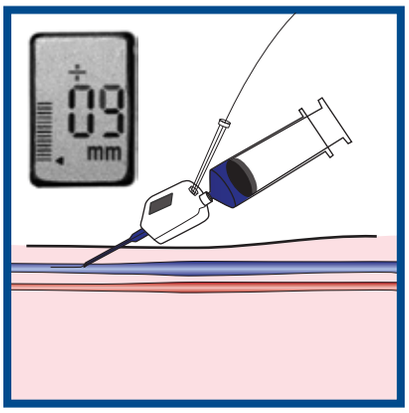
1. Insert needle while aspirating



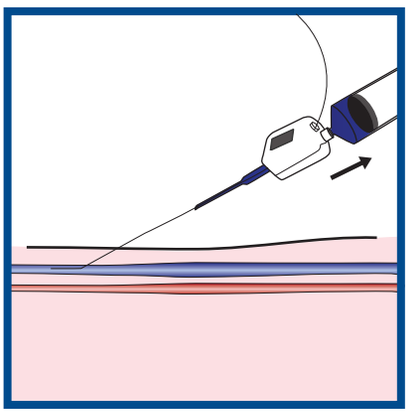
2. Visualize blood color and pressure measurement after venous puncture



ARTERIAL PUNCTURE can be recognized via blood color and/or pressure reading



3. Insert guidewire while monitoring pressure



4. Hold guidewire in place while removing Compass™ assembly

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About Mirador Biomedical

Mirador is partnering with an exceptional group of physicians to develop innovative, cost effective products that provide physiological feedback to alleviate uncertainty during common medical procedures. Mirador Biomedical is a privately held company founded in 2009 in Seattle, Washington

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