10fr 3.30

68% 44% 30% 22% 17% 13% 11%

## **Catheter Occupancy (area method)**

This method is not a traditional "ratio"... it calculates the percentage of area that the catheter occupies of the total vein area.

The result is represented as a percentage.

Vein Diameter (mm)

	Fr Size (mm)										
	3fr	4fr	5fr	6fr	7fr	8fr	9fr				
	1.00	1.35	1.67	2.00	2.30	2.70	3.00				
2	25%	46%	70%								
3	11%	20%	31%	44%	59%	81%					
4	6%	11%	17%	25%	33%	46%	56%				
5	4%	7%	11%	16%	21%	29%	36%				
6	3%	5%	8%	11%	15%	20%	25%				
7	2%	4%	6%	8%	11%	15%	18%				
8	2%	3%	4%	6%	8%	11%	14%				
9	1%	2%	3%	5%	7%	9%	11%				
10	1%	2%	3%	4%	5%	7%	9%				

example guideline: > 20% (red text)

EXAMPLE of Calculations using a 5 Fr catheter in a 5 mm vein

Vein Diameter (mm)

Area of a Circle = pi x radius<sup>2</sup> Radius = Diameter / 2 Percent of a vessel occupied = (Area of Catheter / Area of Vessel) 100



## Catheter Occupancy = 11%

## Vein-Catheter Ratio (linear method)

This method is a ratio that compares 2 straight lines (diameters). The diameter of the catheter is divided by the diameter of the vein. The result may be represented as a percentage.

	Fr Size (mm)									
	3fr	4fr	5fr	6fr	7fr	8fr	9fr	10fr		
	1.00	1.35	1.67	2.00	2.30	2.70	3.00	3.30		
2	50%	68%	84%							
3	33%	45%	56%	67%	77%	90%				
4	25%	34%	42%	50%	58%	68%	75%	83%		
5	20%	27%	33%	40%	46%	54%	60%	66%		
6	17%	23%	28%	33%	38%	45%	50%	55%		
7	14%	19%	24%	29%	33%	39%	43%	47%		
8	13%	17%	21%	25%	29%	34%	38%	41%		
9	11%	15%	19%	22%	26%	30%	33%	37%		
10	10%	14%	17%	20%	23%	27%	30%	33%		

example guideline: >45% (red text)

Diameter of a Catheter = length in mm Diameter of a Vein = length in mm Vein-Catheter Ratio = (diameter of catheter / diameter of vein ) 100





Diameter-Vein Ratio = [ diameter of vein / diameter of catheter ] \* 100Diameter-Vein Ratio = [ 1.67 / 5 ] \* 100Diameter-Vein Ratio = 33%

Catheter-Vein Ratio = 33 %