

# ECONOMIC AND ORGANIZATIONAL IMPACT OF A VASCULAR ACCESS TEAM IN AN ITALIAN HOSPITAL

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## Introduction

Central Venous Catheters enables rapid and reliable intravenous administration of drugs and fluids. In this setting, a Peripherally Inserted Central Catheter (PICC) is a form of intravenous access that can be used for a prolonged period of time. The use of this device generates several advantages: decreases the risk for catheter occlusion and complication and can be inserted by trained nurses<sup>1,2</sup>. In the Italian setting, the creation of specific Vascular Access Team (VAT) dedicated to the central catheters insertion is increasing.

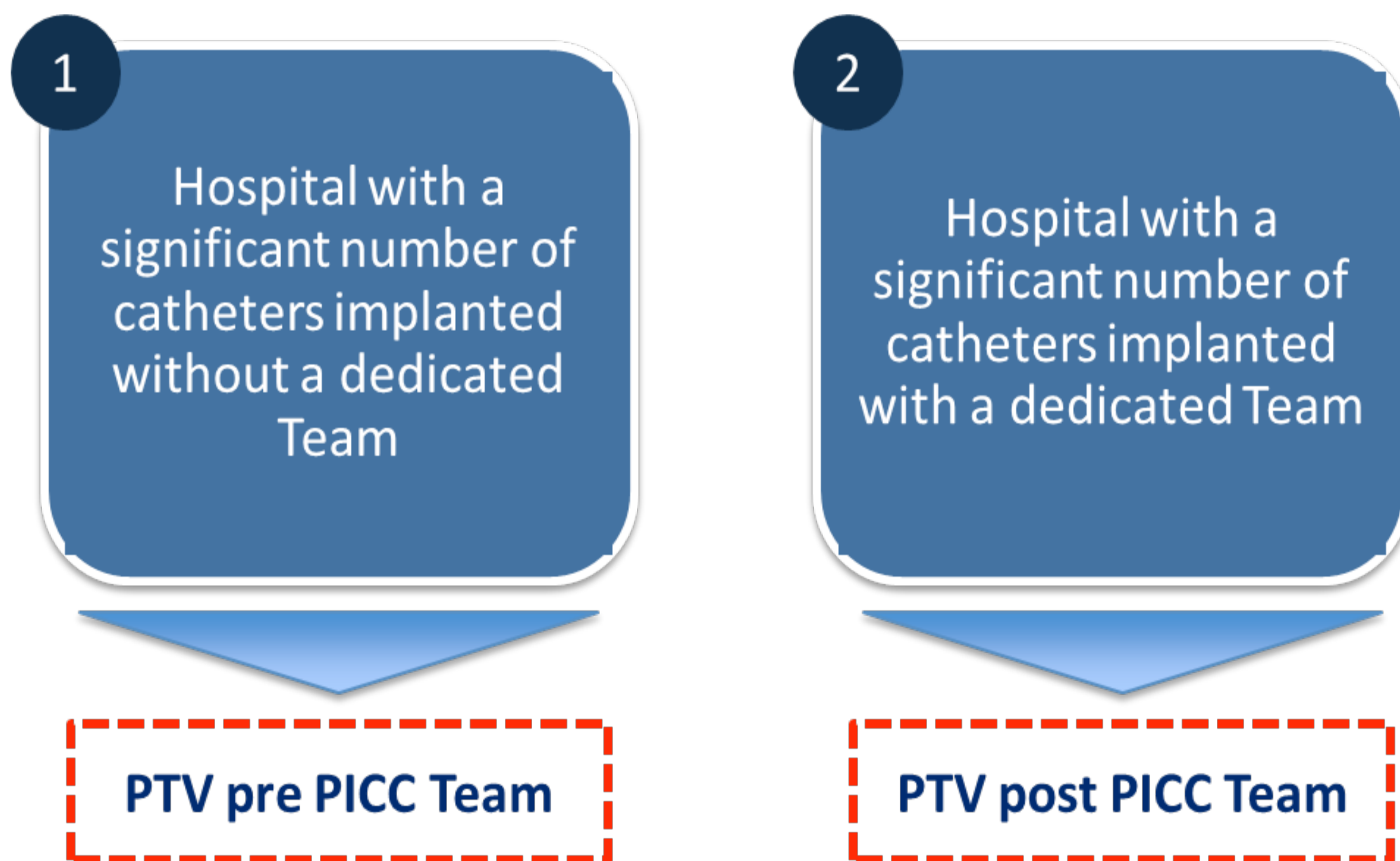
The objective of this study was the identification of clinical/economic and organizational impacts of the introduction of a Vascular Access Team in an Italian hospital.

## Methods

The analysis was performed through the estimation of the savings associated with the reduction of complication rate (i.e. catheter related infections) and with the changes in the medical/technical staff involvement (Table 1 and Table 2) for catheter implantation, in terms of both staff involved in the patients' management and competences needed.

The economic and organizational impact analysis was performed in a single hospital for two different scenarios (Figure 1): pre- and post-VAT creation, respectively scenario 1 and scenario 2.

Figure 1. Scenario analysis



PTV: Percutaneous Transluminal Valvuloplasty

PICC: Peripherally Inserted Central Catheter/Percutaneous Introduction Central Catheter

The identification of the hospital was based on its significance in terms of number of procedures (about 2.600 catheter insertion per year) and healthcare professionals (HCPs) involved. The two scenarios were compared in terms of: number of catheter implantations and devices used (Chest Inserted Central Catheter [CICC], PORT or PICC), HCPs involved, catheter-related infections, costs of staff, devices and other infections. Data were obtained from different sources: literature review; interviews with clinicians and nurses. Interviews were conducted using a questionnaire with both open and multiple-choice questions.

Table 1. Number of implants, infection incidence and time dedicated to the implant of the different kind of catheters in the two scenarios.

SCENARIO 1					SCENARIO 2					
Number of PICC inserted	250				Number of PICC inserted	950				
Number of CICC inserted	1.488				Number of CICC inserted	1.645				
Number of PORT inserted	26				Number of PORT inserted	31				
Number of device days	6.675				Number of device days	22.592				
Infections incidence	14/1.000 Catheter days				Infections incidence	0,6/1.000 Catheter days				
DEVICE	CLINICIAN	NURSE	ANAESTHETIST	RADIOLOGIST	DEVICE	CLINICIAN	NURSE	VASCULAR TEAM	ANAESTHETIST	RADIOLOGIST
CICC		30 minutes	30 minutes	15 minutes	CICC		30 minutes		30 minutes	15 minutes
PORT	45 minutes	45 minutes		15 minutes	PORT	45 minutes	45 minutes			15 minutes
PICC		25 minutes			PICC			25 minutes		

Table 2. Costs inputs used for the scenario analysis.

PROFESSIONALS <sup>3</sup>			
	Min	Max	Mean
Clinician (30 minuti)	12,625 €	20,254 €	16,44 €
Nurse (30 minuti)	6,945 €	8,680 €	7,81 €
Radiologist (30 Minuti)	6,945 €	8,680 €	7,81 €

COMPLICATIONS <sup>4</sup>	
	Cost
Infections (due to increase of inpatient days)	13.035 €

DEVICES <sup>5</sup>	
DEVICE	PRICE
CICC	10,03 €
PORT	137 €
PICC	120 €

## Results

The study showed that the introduction of the VAT in the analyzed hospital generated an increase in the number of catheter insertions (2.626 in scenario 2 compared to 1.764 in scenario 1) and in savings (about 946.000 €, Table 3) thanks to a significant reduction of catheter-related infections incidence (14 per 1.000 catheter days in scenario 1 and 0,6 per 1.000 catheter days in scenario 2) and a better HCPs management (Table 1).

Table 3. Cost comparison in the 2 scenarios

COSTS COMPARISON			
	Scenario 1 (PTV pre Vasc. Team)	Scenario 2 (PTV post Vasc. Team)	DELTA
Devices	48.819 €	135.127 €	86.308 €
Implant procedures	44.636 €	53.815 €	9.179 €
Infections	1.218.121 €	176.692 €	-1.041.429 €
<b>TOTAL COSTS</b>	<b>1.311.575 €</b>	<b>365.634 €</b>	<b>-945.941 €</b>

## Conclusions

The present study indicates that the introduction of a VAT can generate a series of benefits: better catheter management, savings due to decrease of infections incidence and to a better use of HCPs, decrease of CVC and PORT inappropriate implant, continuing professionals' development and better internal training.

## References

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