Real-World Economic and Multi-Criteria Value Assessment of PICC Versus CICC in High-Complexity Patients in Brazil

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ACCEPTANCE CODE

EE227

• PICC • CICC

Hospital perspective | 12-month horizon | 3 Brazilian tertiary hospitals

Shifting 20% of eligible patients from CICC to PICC (240 conversions/year) was clinically beneficial and cost-saving:

USD 468.2k	−12%	−27.0	−8.9	−526.5
net savings / year	budget impact	bloodstream infections	deaths	hospital days

OBJECTIVE

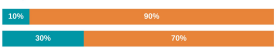
To assess the real-world clinical and economic value of increasing peripherally inserted central catheter (PICC) use versus centrally inserted central catheter (CICC) in high-complexity patients with hematologic malignancies or prolonged antibiotic therapy (>14 days) treated at three Brazilian tertiary hospitals.

METHODS | REAL-WORLD ECONOMIC MODEL

A hospital-perspective budget impact model was developed and parameterized with real-world data (observed event incidence and event-attributable incremental LOS) from three Brazilian tertiary hospitals. Unit costs (BRL) included device, insertion and hospitalization, converted to USD at 1:5. Scenario and one-way sensitivity analyses (±20% key inputs) were performed.



Scenarios (device mix)

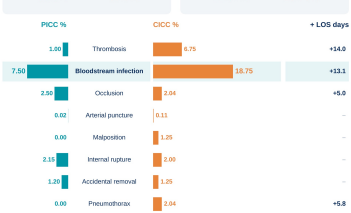


Unit costs per patient (BRL | USD)



REAL-WORLD EVENTS & INCREMENTAL LOS

Placement success	Mortality
93.9%	89.8%
11.07%	15.70%



RESULTS

Despite higher upfront device costs (+USD 63.3k) and insertion-failure costs (+USD 2.0k), complication-related costs fell by USD 533.5k, yielding net savings of USD 468.2k over 12 months. Increasing PICC adoption also avoided 49.8 composite complications and released 526.5 hospital bed-days for new admissions.

Budget impact, 12 months (USD thousands)



7.17	1.7 mo	USD 390	USD 1,951
ROI	payback	per patient	per conversion

MCDA | PERFORMANCE MATRIX

	Criterion	PICC	CICC	Favors
Clinical safety	Mortality	11.07%	15.70%	PICC
	Bloodstream infection *	7.5%	18.75%	PICC
	Thrombosis	1.00%	6.75%	PICC
	Pneumothorax	0.00%	2.04%	PICC
Effective-ness	Placement success	93.9%	89.8%	PICC
Economic impact	Device + insertion cost	USD 458	USD 194	CICC
	Net budget impact	−USD 468k	ref.	PICC
Operational	**Bed-days released ***	+526.5	ref.	PICC

*Stakeholder-weighted domains (ISPOR good practice). ** Main value drivers. Overall value: PICC > CICC.*

CONCLUSIONS

In Brazilian tertiary care, expanding PICC use in oncology and complex infection patients was clinically beneficial and economically dominant. MCDA provided transparent, decision-ready evidence by integrating outcomes, costs and operational gains to support implementation planning and adoption decisions.

Key takeaway: a modest incremental investment (USD 65.3k) unlocked USD 468.2k in net savings and 526.5 bed-days in one year.

Disclosure: This study was sponsored by Becton, Dickinson and Company (BD). Silva L is an employee of BD.

PICC, peripherally inserted central catheter; CICC, centrally inserted central catheter; LOS, length of stay; BSI, bloodstream infection; MCDA, multi-criteria decision analysis; ROI, return on investment. Costs in BRL converted to USD at a 1:5 ratio.

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