

# Multicenter Comparison of Hemolysis Error Rates in PIVO™ vs Standard of Care Samples

## INTRODUCTION

- + Hemolysis errors occur too often in laboratory medicine. Errors can derive from the collection process or post-collection handling.
- + Sample hemolysis alters lab test results and may lead to inaccurate patient treatment or costly re-collections.
- + Blood collections obtained directly from peripheral IVs are avoided because they are thought to be associated with increased dilution and hemolysis.

## METHODS

	HOSPITAL 1	HOSPITAL 2
SETTING	Community hospital with ~250 beds	Tertiary care hospital with ~800 beds
UNITS	ICU, medical / oncology, cardiovascular	Telemetry, ICU, medical
PRACTITIONER	Nurses and laboratory staff (phlebotomists)	Nursing
DURATION	6 Months: April–October 2016	5 Months: April–August 2016
PIVO SAMPLES	~4,000 PIVO collections, ~900 evaluated for hemolysis, 20% sampling	~3,500 PIVO collections, ~280 evaluated for hemolysis, 8% sampling
COMPARISON	6-month historical, 6-month concurrent	7-month historical, 5-month concurrent

## DATA ANALYSIS

	HISTORICAL ALL BLOOD COLLECTIONS	ERROR RATE	ALL OTHER COLLECTIONS DURING EVALUATION	ERROR RATE	PIVO-FLAGGED COLLECTIONS	ERROR RATE	DIFFERENCE TO HISTORICAL	DIFFERENCE TO CONCURRENT	DIFFERENCE TO FULL YEAR
Hospital 1	22,594	2.3%	23,877	2.4%	897	1.6%	-0.7%; CI(-1.5% to 0.1%), p-0.17	-0.8%; CI(-1.6% to 0.0%), p-0.11	-0.8%; CI(-1.6% to 0.0%), p-0.13
Hospital 2	19,215	4.3%	12,709	5.2%	286	2.4%	-1.8%; CI(-3.1% to 0.0%), p-0.13	-2.7%; CI(-4.6% to -1.0%), p-0.04	-2.2%; CI(-4.0% to -0.4%), p-0.08
Pooled	41,809	3.2%	36,586	3.3%	1,183	1.8%	-1.4%; CI(-2.2% to -0.6%), p-0.01	-1.6%; CI(-2.4% to -0.8%), p-0.00	-1.5%; CI(-2.3% to -0.7%), p-0.00

## RESULTS

- + **PIVO reduced the risk of error during a venous blood draw by 39% compared to other collection methods. (Risk ratio .61; CI .40 -.94).**
- + At both institutions, the PIVO sample hemolysis error rate was lower than the standard of care collection methods (venipuncture + line draw) across all comparisons.
- + Pooled data showed the PIVO sample error rate to be statistically superior to other collection methods.



## PATIENT SATISFACTION

- + A subset of patients and practitioners were surveyed for feedback on their experience with PIVO.
- + No patients reported negative feedback on PIVO and 95% would recommend it to other patients.
- + Providers reported improvement in interactions with patients and described the device as “patient requested”.

