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### Clinical Outcomes for Impella Procedure in Octogenarians, Nonagenarians, and Centenarians: A Retrospective Cohort Study

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# Clinical Outcomes for Impella Procedure in Octogenarians, nonagenarians, and centenarians: A retrospective cohort study

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## Background

- Impella is a percutaneously inserted ventricular assist device that has been widely used in patients with severe heart failure complicated by cardiogenic shock.<sup>1</sup>
- There is limited data available on the impact of Impella procedure among the older population.

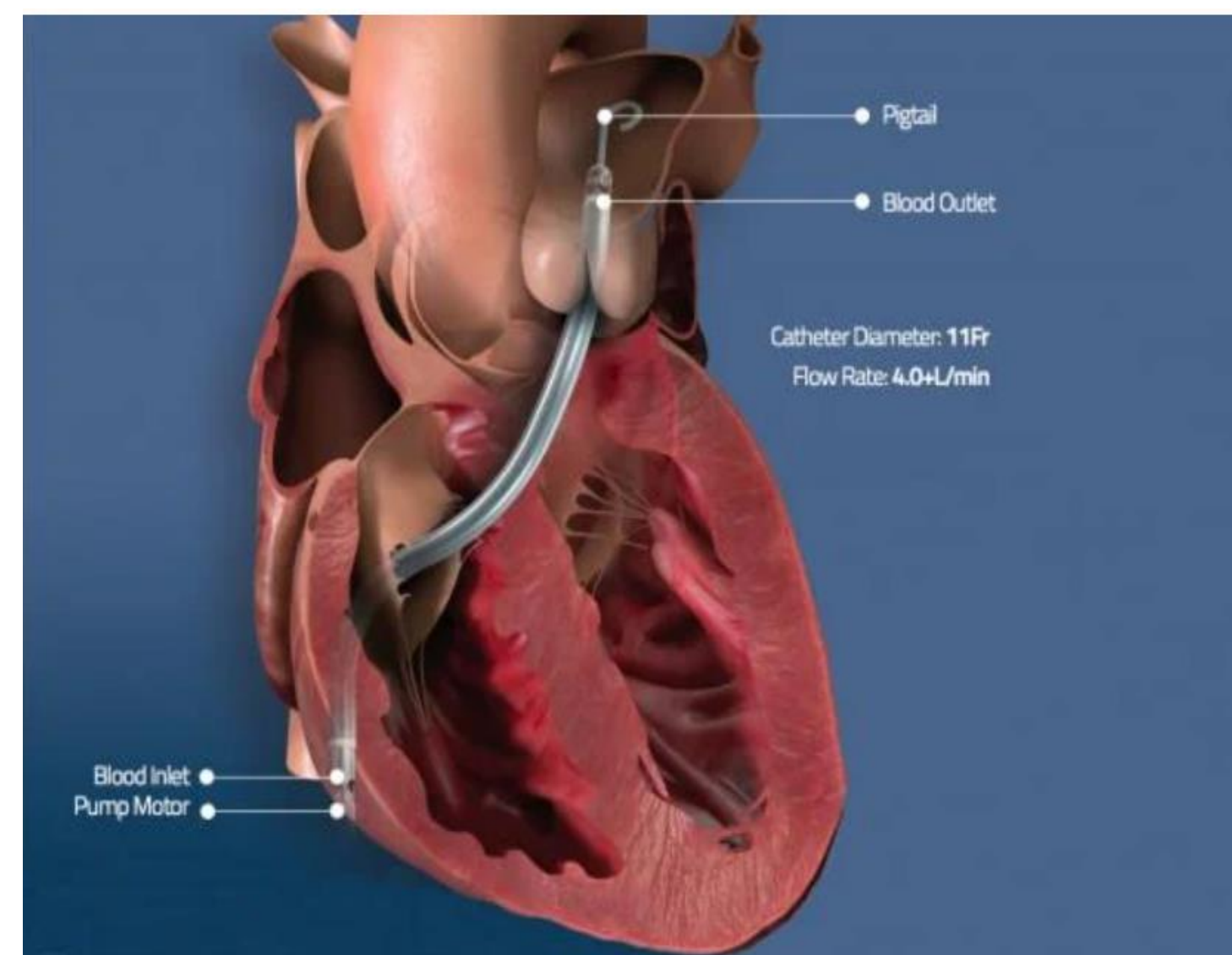
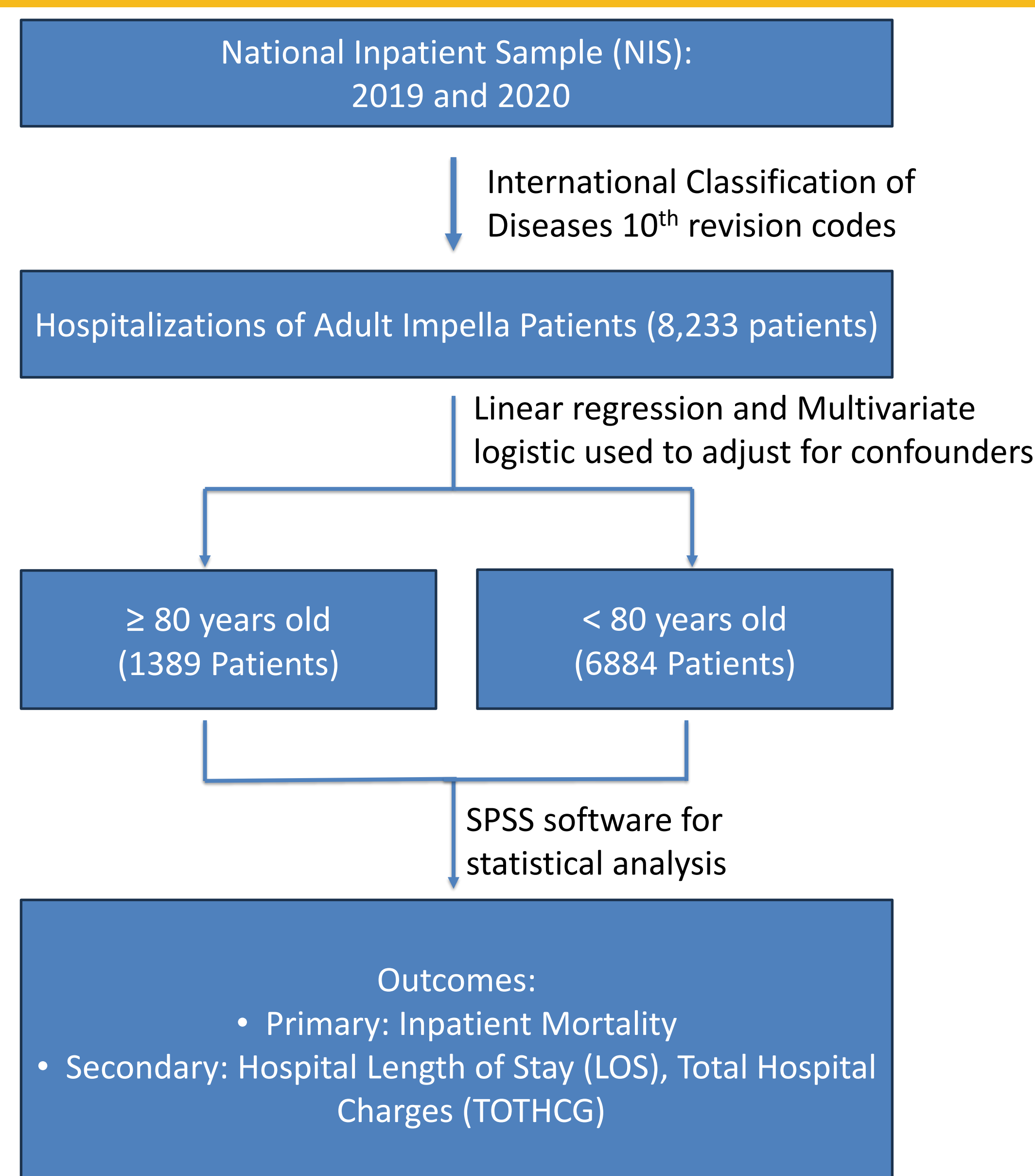


Figure 1. Venous implantation of Impella on Right side of heart.<sup>2</sup>

## Aim

- We sought to examine the national inpatient sample database to describe in-hospital outcomes among these patients.

## Methods



## Results

- This study included 8233 patients who underwent Impella insertion, of which 1389 (16.8%) are older population.
- Older PE patients who were  $\geq 80$  YO who underwent Impella insertion had higher prevalence of hypertension (32.7% Vs 29.1% %,  $P < 0.001$ ), diabetes mellitus (24.6% VS 15.6%  $p < 0.001$ ), and chronic kidney disease (12.1% Vs 8.0%,  $P < 0.001$ ) compared to younger patients. In-hospital mortality was higher among the older population (8.5% VS 6.0%  $p < 0.001$ ).
- Multivariate regression showed that older patients who underwent Impella procedure had higher inpatient mortality (OR 1.182, 95% CI 1.162-1.202,  $P < 0.001$ ). On linear regression analysis, increased age was associated with increased in-hospital mortality ( $p < 0.001$ ). It was also shown that older Impella patients pay more TOTHC (\$234,489 VS \$225,969,  $P < 0.001$ ) in addition to longer length of stay (LOS) (12.6 days VS 10.5 days,  $p < 0.001$ ).

- On secondary analysis it has shown that older population who underwent Impella insertion had higher odds of having ventricular arrhythmia (OR 1.107, 95% CI 1.094-1.120,  $P < 0.001$ ), stroke (OR 1.293, 95% CI 1.247-1.339,  $P < 0.001$ ), acute kidney failure (OR 1.164, 95% CI 1.150-1.179,  $P < 0.001$ ), deep vein thrombosis (DVT, OR 1.120, 95% CI 1.079-1.163,  $P < 0.001$ ), and sepsis (OR 1.150, 95% CI 1.129-1.172,  $P < 0.001$ ).

Outcome	$\geq 80$ years old (n = 1389)	$< 80$ years old (6884 Patients)	P-value
Hypertension (%)	32.7	29.1	$< 0.001$
Diabetes Mellitus (%)	24.6	15.6	$< 0.001$
Chronic Kidney Disease (%)	12.1	8.0	$< 0.001$
In-Hospital Mortality (%)	8.5	6.0	$< 0.001$
Total Hospital Charges (\$)	\$234,489	\$225,969	$< 0.001$
Length of Stay (days)	12.6	10.5	$< 0.001$

Table 1. Comparison of prevalence of various outcomes in Impella patients with and without hyperlipidemia.

Outcome	Odds Ratio	95% CI	P-value
In-Hospital Mortality	1.182	(1.162 – 1.202)	$< 0.001$
Acute Kidney Failure	1.164	(1.150 – 1.179)	$< 0.001$
Ventricular Arrhythmia	1.107	(1.094 – 1.120)	$< 0.001$
Stroke	1.293	(1.247 – 1.339)	$< 0.001$
Sepsis	1.150	(1.129 – 1.179)	$< 0.001$
Deep Vein Thrombosis	1.120	(1.079 – 1.163)	$< 0.001$

Table 2. Associations between various conditions and hyperlipidemia among Impella patients.

## Conclusion

- In this nationally representative population-based retrospective cohort study, Impella procedure was associated with higher mortality and worse outcomes among older patients.

## References

1. Glazier, James J., and Amir Kaki. "The Impella device: historical background, clinical applications and future directions." *International Journal of Angiology* 28.02 (2019): 118-123.
2. Meraj, P. (2019, March 26). *Right Heart Hemodynamic Support With Impella RP, Getting it Right*. Diagnostic and Interventional Cardiology. <https://www.dicardiology.com/article/right-heart-hemodynamic-support-impella-rp-getting-it-right>