Cost-effectiveness analysis of high-potency versus low-potency statins for reducing mortality in coronary artery disease patients on dual antiplatelet therapy post percutaneous coronary intervention.

Shaban Mohammed

RPh, BSc Pharm (Hons), PEBCanada, BCPS,AQ (Cardiology)

Cardiology Clinical Pharmacist specialist

Hamad medical corporation , Qatar

Background

- Intensive statin therapy is associated with a significant reduction of all-cause mortality, Myocardial Infarction, and revascularization rate among patients with Coronary Artery Disease (CAD), including those treated with percutaneous coronary intervention (PCI).

- Evidence of the benefit of high-potency statins against low-potency statins is lacking in Middle east as it was not involved in the clinical trials

Cannon CP, Braunwald E, McCabe CH, et al. Intensive versus moderate lipid lowering with statins after acute coronary syndromes. N Engl J Med 2004;350:1495–504.

Objective and methods

- First-time cost-effectiveness evaluation of high-potency versus low-potency statins for reducing mortality in CAD patients on DAPT post PCI.

- A decision analytic model, from the perspective of the hospital, was constructed to follow possible consequences of using high-potency statins (atorvastatin 40 mg and rosuvastatin 20 mg) versus low-potency statins (atorvastatin 20 mg, pravastatin 40 mg, rosuvastatin 10 mg), in 18 years of age or older CAD patients, post PCI

Methods

- The primary end points were the first-year and long-term survival rates among patients, as well as the overall direct medical cost of therapy.
- The model inputs were based on 550 retrospectively recruited patients between October 2012 to March 2013 in Heart Hospital, a tertiary cardiac center in Qatar, who were then individually followed up until 2019.
- Survival analysis was performed using log rank Kaplan Meier. Sensitivity analyses via Monte Carlo simulation enhanced robustness and the generalizability of study results

Results

- Baseline characteristics
-

Variable	Moderate statin	Intensive statin	P value
Age	55 (11.8)	53 (10.0)	0.033
SEX			0.54
Female	18 (10.2%)	32 (8.6%)	
Male	159 (89.8%)	341 (91.4%)	
Ethnicity			0.1
Arab	78 (44.1%)	141 (37.8%)	
Asian	84 (47.5%)	211 (56.6%)	
Others	15 (8.5%)	21 (5.6%)	
Aspirin	177 (100.0%)	373 (100.0%)	
Clopidogrel	177 (100.0%)	373 (100.0%)	
DIAGNOSIS			0.18
NSTEMI	56 (31.6%)	111 (29.8%)	
STABE ANGINA	12 (6.8%)	25 (6.7%)	
STEMI	75 (42.4%)	134 (35.9%)	
UA	34 (19.2%)	103 (27.6%)	

Results

- Clinical outcomes
-

Variable	Moderate statin	Intensive statin	P value
In-Stent restenosis	7 (4.0%)	11 (3.0%)	0.53
In-stent thrombosis	2 (1.1%)	1 (0.3%)	0.2
In-hospital mortality	6 (3.4%)	4 (1.1%)	0.057
6-Month Mortality	12 (6.8%)	11 (2.9%)	0.036
ONE YEAR MORTALITY	10 (5.6%)	6 (1.6%)	0.008
Readmission over 18year	42 (23.7%)	102 (27.3%)	0.37

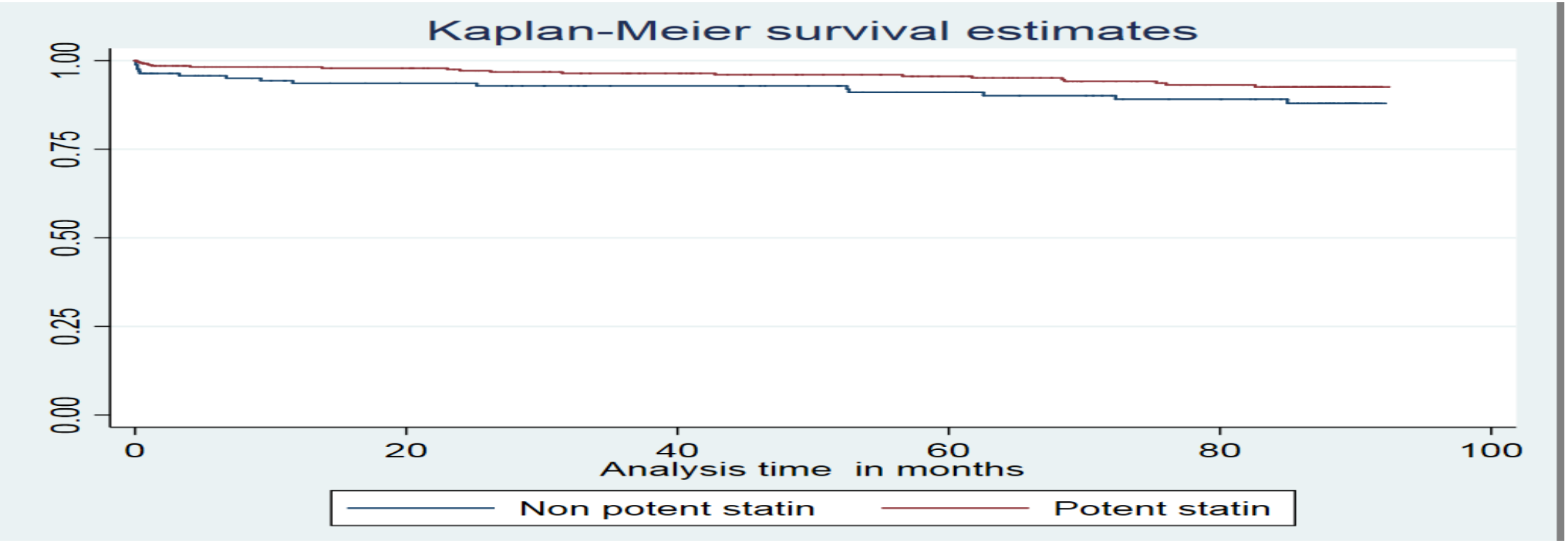
Results

- **Multivariate analysis: Predictors of 1-year mortality post angioplasty**

Variables	Odds Ratio	P value	[95% Conf. Interval]
Age	1.01	0.66	0.967 - 1.06
Intensive Statin	0.2781847	0.016	0.10 - 0.79
Stable Angina	2.031872	0.42	0.36- 11.39
STEMI	0.8275297	0.771	0.23 - 2.96
Unstable Angina	1.081545	0.909	0.28 - 4.17
Diabetes Mellitus	1.905874	0.215	0.69 - 5.28

Results

Survival analysis in months for Potent versus Non potent using log rank Kaplan Meier



Results

- Calculated overall cost-saving of $US 3,081 in favor of the high-potency statins per patient
- The high-potency statins dominates the low-potency ones against both first-year and long-term survival outcomes.
- Based on multivariate uncertainty analysis, the reported dominance of high-potency statins was maintained in 90% of simulated cases

Conclusion

- The use of high-potency statins significantly reduces first-year mortality with DAP post PCI in CAD patients, compared to low-potency statins, and is a cost-effective approach for enhancing the patients' first-year and long-term survival outcomes.

- **Limitation of the study :**
- Retrospective study, associations but not casualty can be inferred.
- The database did not include information about side effect profile associated with intensive statin therapy.

Thank you