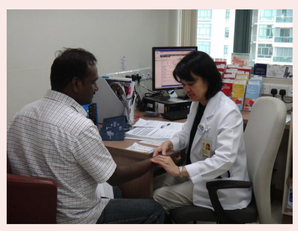
Tan Tock Seng HOSPITAL | *A Community of Care*

Impact of a Cardiovascular Pharmacist Early Review in a Multi-disciplinary Clinic for Patients Undergoing Percutaneous Coronary Intervention (PCI)



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Background

Percutaneous coronary intervention (PCI) is the predominant method of revascularization for patients with ischaemic heart disease. More than 1000 PCIs are performed in Tan Tock Seng Hospital (TTSH) each year and these revascularised patients were routinely reviewed by cardiologists in a post-PCI clinic within 6 weeks.

Objective

A multi-disciplinary PCI clinic involving an early review by a cardiovascular (CVS) pharmacist as first point of contact post-PCI was formed in October 2011 and this retrospective study aimed to evaluate the impact of this new approach.

Method

All patients with recent PCI and those reviewed by CVS pharmacist from October 2011 to June 2012 were recruited into the study. Patients with PCI done in the preceding months from April to August 2011 (matched by baseline clinical characteristics) formed the standard care control group.

End-points analysed:

1. Hospital readmission rates
2. Initiation of essential medications
   - Angiotensin-converting enzyme inhibitor (ACE-I)
   - Beta blocker
3. Risk factor control
   - Low Density Lipoprotein (LDL) levels
   - Glycated Haemoglobin (HbA1c) levels

Results

386 patients were recruited in this study. No difference in baseline characteristics was found between both groups.

	Pharmacist (n=193)	Conventional (n=193)	p value
Age	56.58+/-11.23	58.14+/-11.79	p > 0.05
Male	160 (83%)	168 (87%)	
Ethnic			
- Chinese	129 (67%)	124 (64%)	
- Malay	32 (17%)	22 (11%)	
- Indian	25 (13%)	33 (17%)	
- Others	7 (4%)	14 (7%)	
Hypertension	106 (55%)	114 (59%)	
Hyperlipidemia	173 (90%)	164 (85%)	
Diabetes mellitus	76 (39%)	88 (46%)	
Smoker	85 (44%)	79 (41%)	
Admission reason			
- STEMI	88 (46%)	89 (46%)	
- NSTEMI	41 (21%)	35 (18%)	
- Angina	61 (32%)	63 (33%)	
- Congestive Heart Failure	3 (2%)	6 (3%)	
Ejection Fraction (%)	46.28+/-10.55	44.98+/-11.07	

Table 1: Summary of patient characteristics in the pharmacist group and conventional group

Comparing initiation of beta-blocker and ACE-I in patients not initiated during admission, more patients in the pharmacist-review group had these essential medications initiated.

	Pharmacist (n=193)	Conventional (n=193)	p value
Beta-blocker initiation	**11 out of 17 (64.7%)**	**4 out of 20 (20%)**	**p < 0.01**
ACE-I initiation	**22 out of 32 (68.8%)**	**6 out of 23 (26.1%)**	

Table 3: Initiation of essential medications in the pharmacist group and conventional group

1 year cardiovascular (CVS)-related readmission was found to be significantly lower in the pharmacist-review group compared to the conventional group.

	Pharmacist (n=193)	Conventional (n=193)	p value
CVS-related readmission within 1 year	**21 (10.9%)**	**37 (19.2%)**	**p =0.023**
Readmission within 30 days	9 (4.7%)	18 (9.3%)	p > 0.05
Readmission within 1 year	38 (19.7%)	59 (30.6%)	
Emergency dept visit within 1 year	44 (22.8%)	42 (21.8%)	
CVS-related Emergency dept visit within 1 year	16 (8.8%)	15 (7.8%)	
Sudden cardiac death	0 (0%)	2 (1%)	

Table 2: Readmission rates in the pharmacist group and conventional group

Reduction in both LDL and HbA1c levels were found to be greater in the pharmacist-review group .

	Pharmacist (n=193)	Conventional (n=193)	p value
LDL baseline (mmol/dL)	**3.34 ± 1.24**	**3.08 ± 1.07**	**p = 0.026**
LDL reduction over 6 months (mmol/dL)	**1.33 ± 1.21**	**0.89 ± 1.12**	**p < 0.01**
	Pharmacist (n=45, 23%)	**Conventional (n=47, 24%)**	**p value**
HbA1c baseline (≥ 7.5%)	9.65 ± 1.82	9.28 ± 1.79	p > 0.05
HbA1c reduction over 6 months	**2.19 ± 2.26**	**1.25 ± 1.92**	**p = 0.038**

Table 4: Control of risk factors in the pharmacist group and conventional group

Discussion

- Providing early review with pharmacist counselling allowed prompt attention to patient's symptoms and potentially improving compliance, thereby reducing rate of CVS-related readmission. Furthermore, undesirable adverse effects could be detected early.
- Early review permitted an early opportunity to initiate and titrate essential medications (beta blocker and ACE-I), conferring a greater cardio-protective effect. Aggressive management of risk factors could be carried out early too.
- With the integration of adequate education on their medication and lifestyle modification, patients were empowered to play a role in the rehabilitation of their heart.

Limitations

- Results obtained may be impacted by both early review and pharmacist management.
- Lifestyle modification was concurrently reinforced at the cardiac rehabilitation programme and the level of intervention was not measured.
- Other cardiovascular risk factors (e.g. control of blood pressure, smoking) were not studied.

Conclusion

Having a Cardiovascular Pharmacist review early post-PCI can potentially:

- Reduce cardiovascular readmission rate
- Result in higher rate of initiation and usage of beta-blocker and ACE-I
- Improve control of hyperlipidaemia and diabetes mellitus

References

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