



Effectiveness of Strategies in Improving Outpatient Cardiac Rehabilitation Program (CRP) Recruitment

Ms. Huang Yanhong
Senior Staff Nurse
Case Management

Outpatient Cardiac Rehabilitation

- **A medically-supervised program comprising exercise training, education and counseling.**
- **To boost the overall physical, mental and social assistance for patients with heart disease.**

American Heart Association, 2017

- **45 - 47% reduction in all-cause mortality and 31% lower hospital readmissions.**

**American Heart Association, 2017 &
Schopfer and Forman, 2016**

CRP Recruitment Rates

According to Babu et al., 2016:

- **CRP recruitment rate is less than 30% in Europe as reported in 15 countries.**
- **12% in United States.**

Yeo (2017) reported it as less than 10% in Singapore.

Study Aims

- 1. To evaluate effectiveness of strategies in recruitment rate for outpatient Cardiac Rehabilitation Program.**
- 2. To compare the readmission and mortality rates of CRP participants and non-participants post-AMI.**

Ethical Consideration

- **Waiver of consent was approved by SingHealth Central Institutional Review Board (CIRB).**
- **Analysed data was password protected and accessible only by researchers.**

Research Methodology

- **A prospective longitudinal study**
- **From 2014 to 2017**
- **Data analysed using SPSS version 20**
 - **T-test & Chi-Square**
 - **Statistical significant value defined as $p < 0.05$**

Inclusion and Exclusion Criteria

Inclusion Criteria

- Admitted to Changi General Hospital Cardiology Department from January 2014 to December 2017.
- A primary diagnosis of AMI and fully re-vascularised.

Exclusion Criteria

- Medically unstable, life-threatening condition: left ventricular clot, etc.
- Patients with physical or mental disabilities.

A Baseline Study: 2013

BARRIERS TO OUTPATIENT CARDIAC REHABILITATION AT CHANGI GENERAL HOSPITAL

D Loh, R Tioh, Y Cao, DM Yang, P Kaur, YH Huang, J Choo, M Tan, W Soo, SH Ong
 Department of Case Management, Department of Cardiology, Changi General Hospital

Introduction

Cardiac rehabilitation program (CRP) is an essential element of comprehensive care after acute myocardial infarction (AMI), focusing on risk factor reduction and the promotion of healthy behaviours thus decrease risk of recurrent AMI and improve exercise capacity.¹ Despite the documented evidence of the benefits of cardiac rehabilitation in enhancing recovery and reducing mortality following a myocardial infarction, the patient participation rates remain low in Changi General Hospital (CGH) (5% in 2013).^{2, 3}

Aim

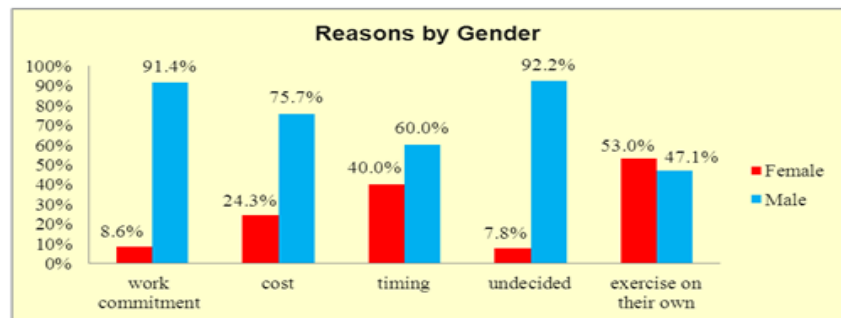
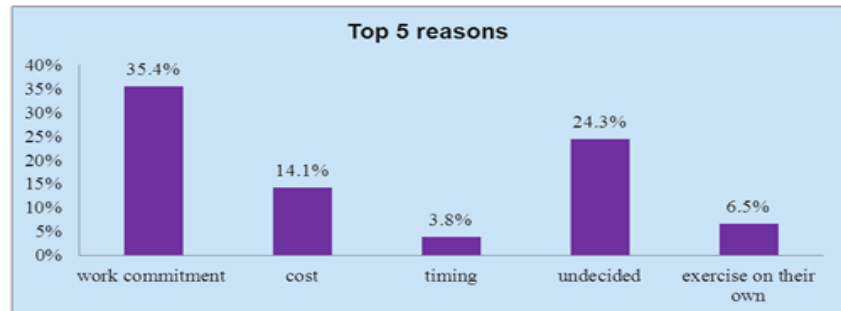
To quantitatively investigate barriers in outpatient cardiac rehabilitation program enrolment and participation.

Methods

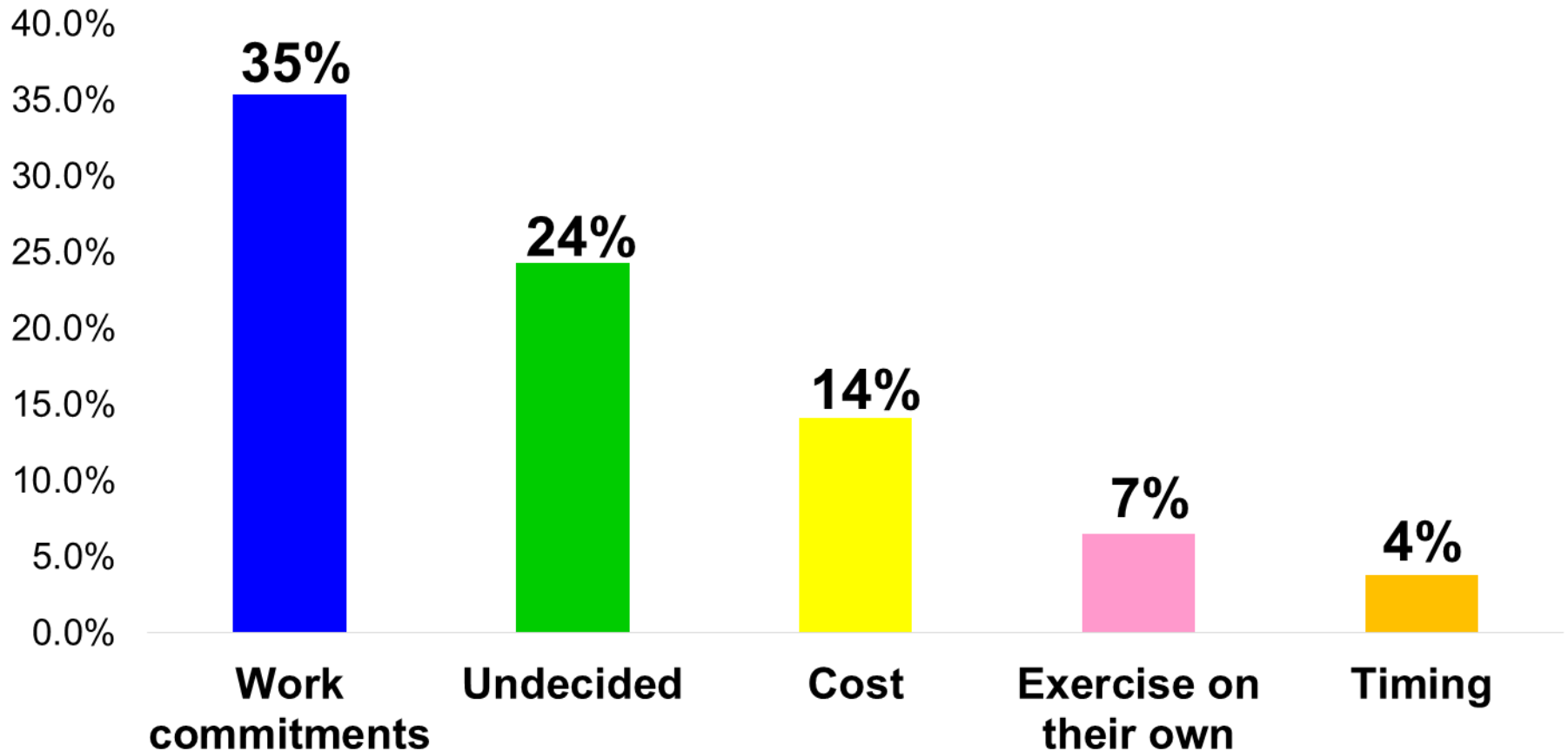
A retrospective study of all patients admitted to CGH Cardiology Department with a confirmed diagnosis of AMI from January to December 2013. The reasons for patients declining the cardiac rehabilitation program were elicited from case notes.

CRP Enrolment

The Cardiac Care Nurse screened all patients admitted for AMI. Patients who met the following criteria were enrolled into CRP :
 •Confirmed diagnosis of AMI and medically stable

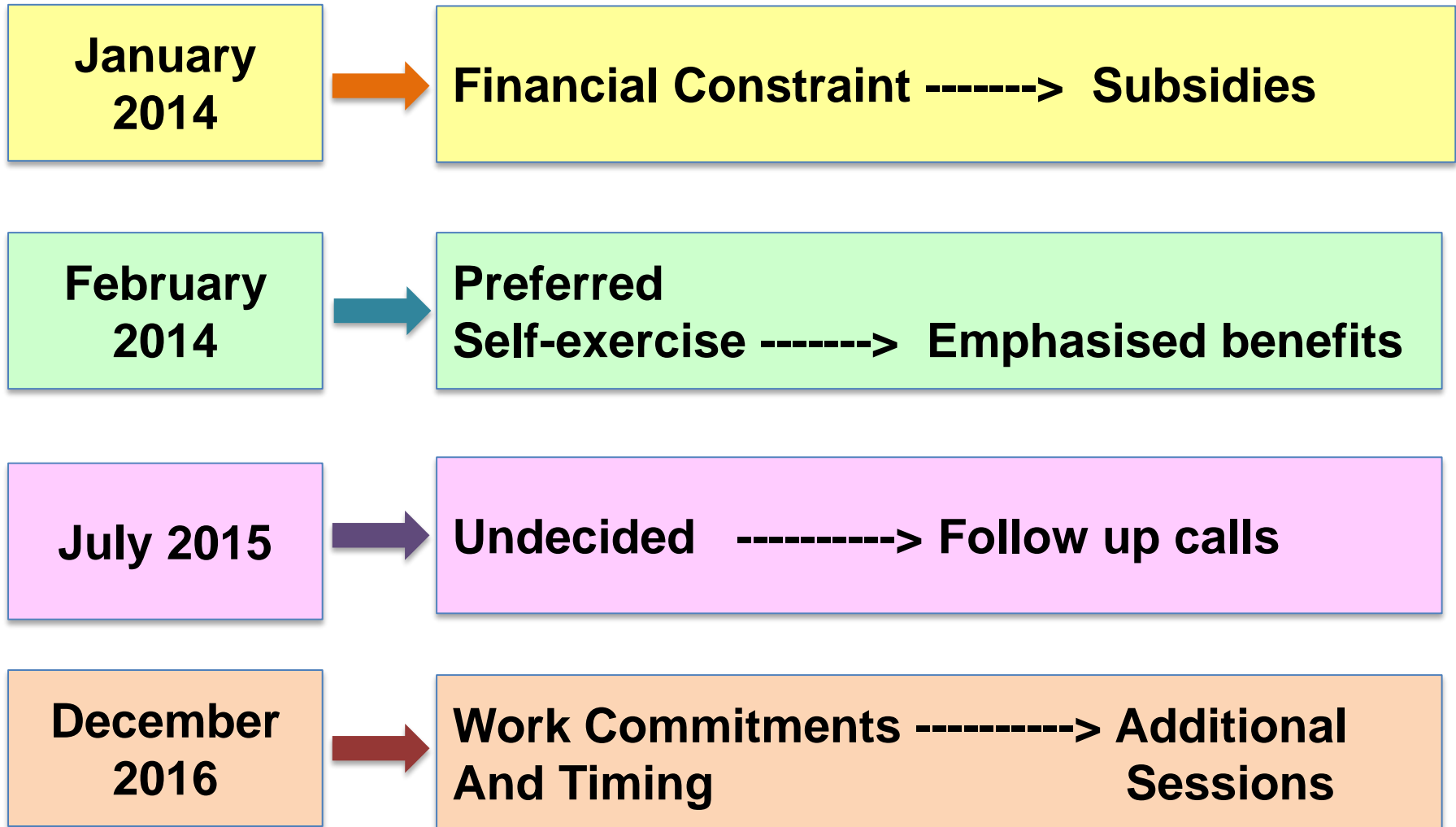


Top 5 Barriers to Outpatient CRP



Loh et al, 2013

Timeline for Strategies Implemented



Research Findings

Sample Size

3727

Total AMI patients:
January 2014 – December 2017

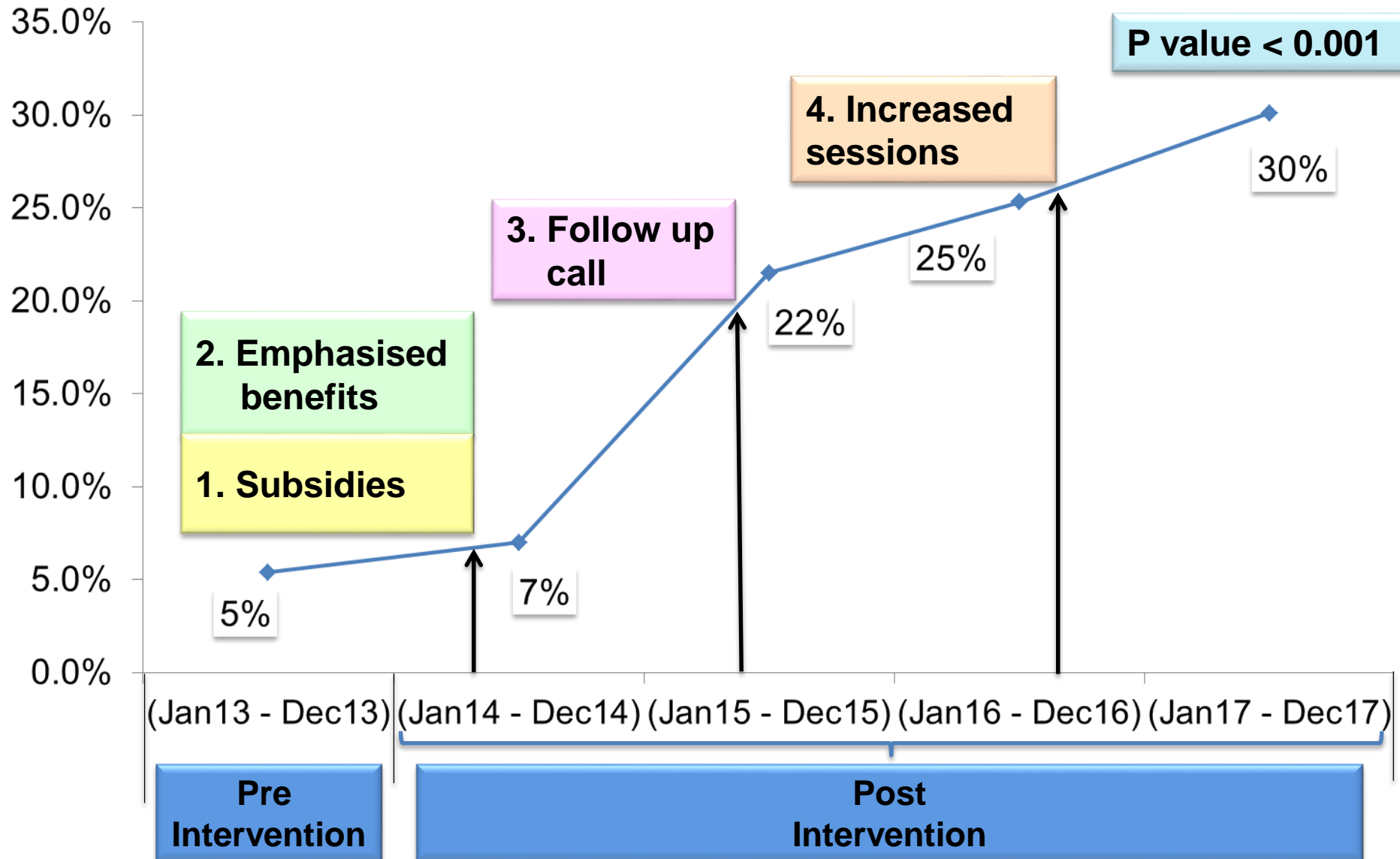
1007

27% Eligible for outpatient CRP

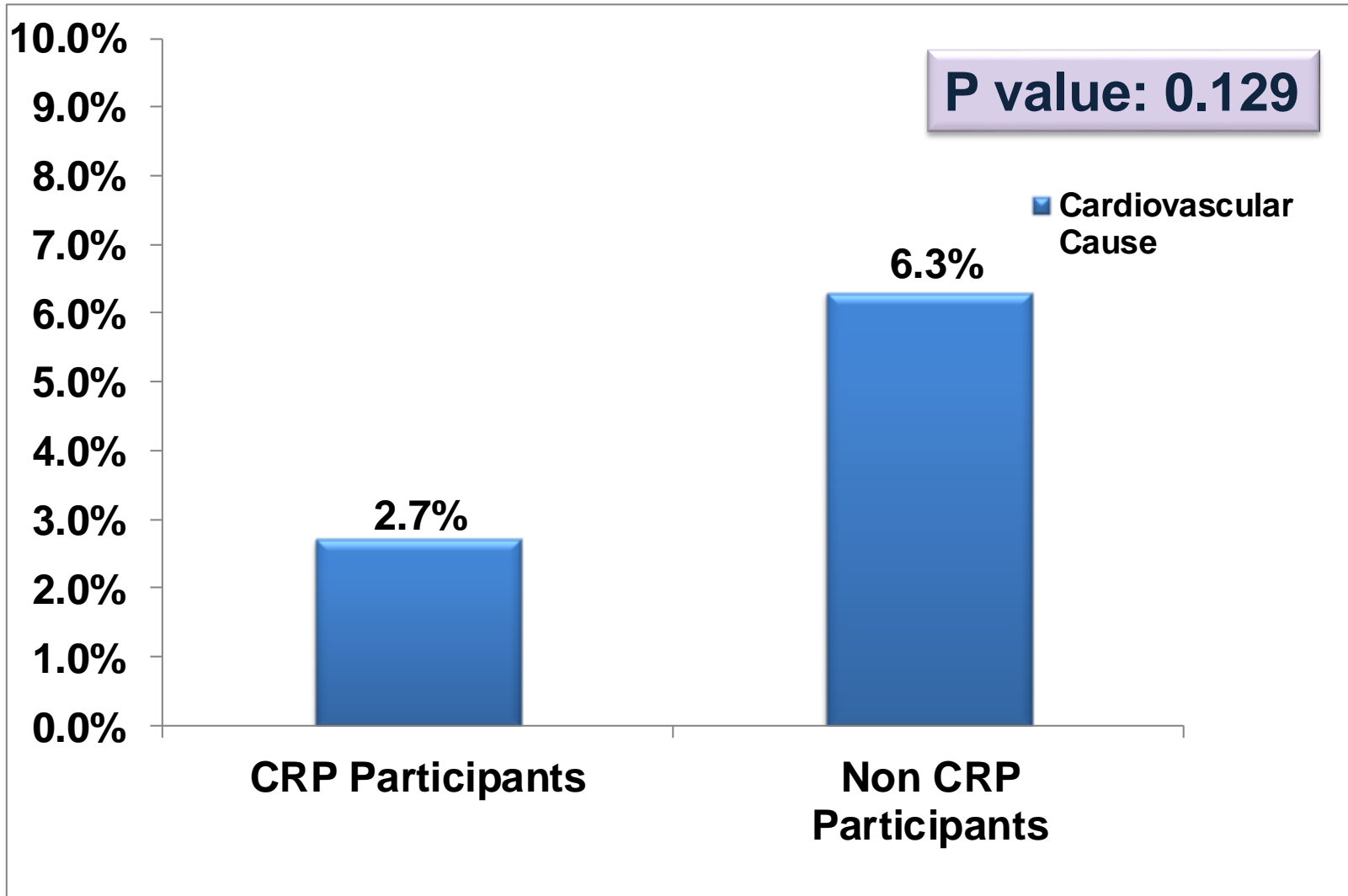
Results

Variables	Pre Intervention (2013) n=263	Post intervention (2014 - 2017) n=989	p value
Age (mean)	56.57	56.14	0.588
Female	83 (32%)	294 (30%)	0.565
Male	180 (68%)	695 (70%)	
Chinese	130 (49%)	520 (53%)	0.066
Malay	79 (30%)	223 (23%)	
Indian	31 (12%)	152 (15%)	
Others	23 (9%)	94 (10%)	
Smoker	115 (44%)	513 (52%)	0.019
Hypertension	138 (53%)	495 (50%)	0.485
Diabetic Mellitus	83 (32%)	315 (32%)	0.928
Hyperlipidemia	229 (87%)	814 (82%)	0.065

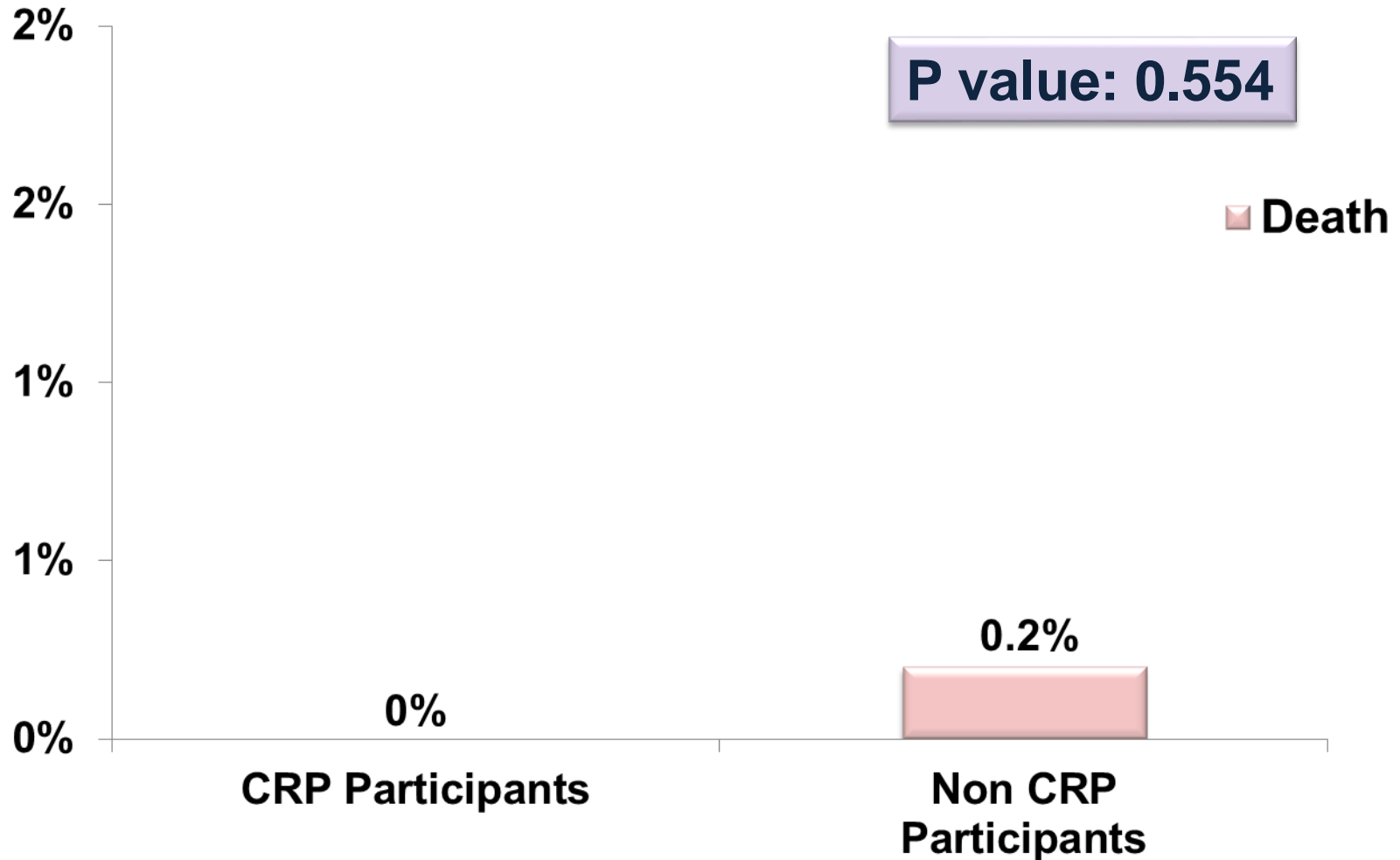
Outpatient CRP Recruitment Rate



180-Days Readmission Rate



180-Days Mortality Rate



Discussion

- **In spite of the paramount importance of CRP, its enrollment rate remains low globally.**
- **This study has demonstrated that multi-fold targeted strategies had increased significantly in outpatient CRP recruitment.**
- **It also shows reduction in cardiovascular readmission rate in patients post-AMI.**

Limitations

May not be able to generalise the findings to other institutions.

Relevance to Clinical Practice

- 1. Improve clinical outcome of patient in reducing readmission and mortality.**
- 2. Provide practical guide for CRP team to improve recruitment in local setting.**

Conclusion

- ✓ **Multi-fold strategies implemented had resulted increased in the outpatient CRP recruitment.**
- ✓ **Possibly less Cardiovascular related readmissions.**

References

- American Heart Association. (2017). **FACTS, Cardiac Rehabilitation, Putting More Patients on the Road to Recovery**. Retrieved 05 July 2018, from http://www.heart.org/idc/groups/heart-public/@wcm/@adv/documents/downloadable/ucm_493752.pdf
- Babu, A., Lopez-Jimenez, F., Thomas, R., Isaranuwachai, W., Herdy, A., Hoch, J. and Grace, S. (2016). **Advocacy for outpatient cardiac rehabilitation globally**. *BMC Health Services Research*, 16(1).
- Coll-Fernández, R., Coll, R., Pascual, T., Sánchez Muñoz-Torrero, J., Sahuquillo, J., Manzano, L., Aguilar, E., Alcalá-Pedrajas, J., Álvarez, L., García-Díaz, A., Mujal, A., Yeste, M. and Monreal, M. (2014). **Cardiac Rehabilitation and Outcome in Stable Outpatients With Recent Myocardial Infarction**. *Archives of Physical Medicine and Rehabilitation*, 95(2), pp.322-329.
- Loh, D., Tioh, R., Cao, Y., Yang D.M., Kaur, P., Huang, Y.H., Choo, J., Tan, M., Soo, W. and Ong S.H. (2013). **Barriers To Outpatient Cardiac Rehabilitation at Changi General Hospital**.

References

- Thomas, R., Balady, G., Banka, G., Beckie, T., Chiu, J., Gokak, S., Ho, P., Keteyian, S., King, M., Lui, K., Pack, Q., Sanderson, B. and Wang, T. (2018). 2018 ACC/AHA Clinical Performance and Quality Measures for Cardiac Rehabilitation: A Report of the American College of Cardiology/American Heart Association Task Force on Performance Measures. *Circulation: Cardiovascular Quality and Outcomes*, 11(4), p.e000037.
- Schopfer, D. and Forman, D. (2016). Cardiac Rehabilitation in Older Adults. *Canadian Journal of Cardiology*, 32(9), pp.1088-1096.
- Sumner, J., Harrison, A. and Doherty, P. (2017). The Effectiveness of Modern Cardiac Rehabilitation: A Systematic Review of Recent Observational Studies in Non-attenders Versus Attenders. *PLOS ONE*, 12(5), p.e0177658.
- Yeo, T. J. (2017) 'The road to a healthier heart doesn't stop at the hospital', Channel NewsAsia. 14 November. Available at <http://origin-www.channelnewsasia.com/news/health/the-road-to-a-healthier-heart-doesn-t-stop-at-the-hospital-9389564> (Assessed: 05 June 2018)

thank
YOU
so
much