Benefit of Post PCI Medical Checklist to Improve Adhering with Best Practice Guidelines in the Patients with Coronary artery disease undergoing Percutaneous Coronary Intervention (PCI)

Ussanee Phed-on RN*,
Saowanee Naowapanich RN*, Umaporn Poolsawat RN*,
Akarin Nimmannit MD*, Nattawut Wongpraparut MD, FACP, FACC, FSCAI*

** Division of Cardiology, Department of Medicine, Faculty of Medicine, Siriraj Hospital, Bangkok, Thailand*

Objective: *To evaluate the effectiveness of medical and health education checklist according to ACC/AHA guidelines for improving compliance in the patients with coronary heart disease who underwent percutanoeus coronary intervention (PCI).*
Material and Method: *This study was a prospective cohort study between control group (historical coronary artery disease (CAD) cases who underwent PCI between October 2008 and May 2009) and a case group (CAD cases who underwent PCI between May 2009 and January 2010) at Her Majesty Cardiac Center floor 8th and Cardiac Care Unit, Faculty of Medicine, Siriraj Hospital, Mahidol University. In the control group, basic care proceed. In the case group, usual cares plus medical and health educational checklists proceed at 24 hours Post PCI, before discharge and at 6 months follow-up at PCI clinic.*
Results: *The study consisted of 160 patients, 79 patients in the control group and 81 patients in the case group. In the case group, patient received more frequent use of in-hospital ACE-I (100% vs. 72%, $p < 0.001$), β blockers (100% vs. 61.5%, $p < 0.001$). At 6 month follow-up, the use of ACE-I (100% vs. 84.6%, $p < 0.001$) and β blockers (100% vs. 82.1%, $p < 0.001$), remain higher in the case group. Comparing case group and control group,using the applied post PCI medical checklist correlated with more frequent use of in hospital angiotensin-converting enzyme inhibitors (100% vs. 71.8%, $p < 0.001$), β blockers (100% vs. 61.5%, $p < 0.001$). When looking at the quality of care indicators between two groups at 6 month follow-up, the patients with DM, CKD in the case group have better blood pressure control according to the guidelines (64.5% vs. 35.1%, $p < 0.001$). Six-month readmission rates were higher in control group as compared to case group (12.7% versus 5.2%, $p < 0.005$).*
Conclusion*: We found that applied medical and health educational checklists improve both adhering to the best practice guideline and clinical outcome in the patients with CAD underwent PCI.*

Keywords: *Checklist, Adhering to guideline, Quality of care, Coronary artery disease*

J Med Assoc Thai 2011; 94 (Suppl. 1): S1-S10
Full text. e-Journal: *http://www.mat.or.th/journal*

Coronary Artery Disease (CAD) is the second most common cause of death in Thailand. Each 60 minutes, 7 people in Thailand die from coronary artery disease[1]. CAD risk reduction will decrease the probability of recurrence CAD, progression of disease and mortality. Medical treatment for atherosclerosis has been proven to be of benefit in mortality reduction. It is quite important, especially in the patients with documented coronary artery disease. In the patients with severe coronary artery disease, either chronic stable angina CCS III-IV or acute coronary syndrome that needed to undergo percutaneous coronary intervention, the secondary prevention is very crucial and highly impacts their future clinical outcome. The ISIS II trial study show patients with CAD who received ASA dosage 160-325 mg/day had a lower mortality rate as compared to the control group[2]. The COMMIT/CCS2 showed adding clopidogrel (75 mg daily) on a background of standard therapy including aspirin can reduce the risk of death, non-fatal MI, or non-fatal stroke

Correspondence to:
Wongpraparut N, Division of Cardiology, Department of Medicine, Faculty of Medicine, Siriraj Hospital, 2 Prannok road, Bangkoknoi, Bangkok 10170, Thailand.
Phone: 0-2419-6104
E-mail: Wongpraparut@yahoo.com

by 9%[3]. The Carvidolol post-infarct survival control in left ventricular dysfunction (CAPRICORN) trial supported the benefit of β-blocker on, mortality reduction in the patients with recent MI and systolic dysfunction[4]. The use of statin agents in acute myocardial infarction (AMI) is well established and well proven from CARE, 4-S, MIRACLE, PROVE-IT[5-8]. The benefit of angiotensin converting enzyme inhibitors in mortality reduction and reduction in risk of developing heart failure in the patients with MI has been demonstrated in multiple trials[9-11]. According to ACC/AHA guideline, patients with document coronary artery disease should received aspirin, β-blocker, ACEI/ARB and statin for secondary prevention[12]. Not receiving medication for secondary prevention according to the guideline will significantly impact long-term mortality[13]. The REACH registry showed that only 79% of patients at high atherothrombotic risk received antiplatelet therapy[14]. The CHAMP study revealed implementing guideline-derived preprinted discharge medication order for patients with myocardial infarction reduces inpatient mortality[15].

We investigated whether applied medical and health educational checklist after percutanoeus coronary intervention (PCI) will increase adhering to practice guideline according to ACC/AHA guideline at our hospital.

Objective

To investigate whether an applied medical checklist which included medications (aspirin, clopidogrel, β-blocker, statin), health education (smoking cessation, dietary control and physical activity) as recommended by ACC/AHA guidelines for patient with acute coronary syndrome who underwent PCI at Her Majesty Cardiac Center floor 8th and Cardiac Care Unit, Faculty of Medicine, Siriraj Hospital, Mahidol University, will improve adhering to the guidelines and also improve clinical outcomes for these patients.

Material and Method

Patient population

This study was collected data from the patient at Her Majesty Cardiac Center floor 8th and Cardiac Care Unit, Faculty of Medicine, Siriraj Hospital, Mahidol University. The Study population consisted 2 groups:

1. The control group, historical CAD cases who underwent PCI between October 2008 and May 2009).

2.The case group included CAD cases who underwent PCI between May 2009 and January 2010.

In the control group, usual care proceeds. In the case group, usual care plus medical checklists proceed at 24 hours after PCI, before discharge and after 6 mounts follow-up at PCI clinic. We collected data from in-patient medical record and in the OPD card when they return for follow-up at PCI clinic (Six months after Discharge). The chart specifically reviewed for medications such as aspirin, clopidogrel, β-blocker and statin and for health care education concerning (smoking cessation, dietary control and physical activity). Each chart was specifically reviewed with regard to whether or not patients have received each medication and relevant advice. The institutional review board approved the study.

Percentage of medications and health care advice received were compared between two groups. Six months clinical outcomes were evaluated between the two groups.

Statistical analysis

The Variables of data such as the characteristics of study population and health education (smoking cessation, dietary control and Physical activity) are presented as frequency, percentage and mean $\pm$ SD and compare between group qualitative data were calculate by t-test and qualitative data were calculate by Chi-square test (p-value < 0.05 significant).

Results

The study consisted of 160 cases, 79 cases as the control group and 81 cases as the case group. The baseline demographics, degree and severity of coronary artery diseases and history of PCI were similar in both groups (Table 1). Baseline LDL level in the case group is slightly higher when compare to the control group, (125.7 ± 33 vs. 93.7 ± 34, $p = 0.06$). Other baseline laboratory data is similar between two groups (Table 2).

Comparing case group and control group the applied post PCI medical checklist correlated with more frequent use of in hospital angiotensin-converting enzyme inhibitors (100% vs. 71.8%, $p < 0.001$), β blockers (100% vs. 61.5%, $p < 0.001$) (Fig. 1). When comparing lists of discharge medications, it was found that there is more frequent use of angiotensin-converting enzyme inhibitors (100% vs. 71.8%, $p < 0.001$), β blockers (98.7% vs. 62.8%, $p < 0.001$), in the case group (Fig. 2). At 6 month follow-up, the use of angiotensin-converting enzyme inhibitors (100% vs. 84.6%, $p < 0.001$) and β blockers (100% vs. 82.1%, p <

Table 1. Baseline demographics between two groups (n = 160)

Characteristics	Control group (%) n = 79	Case group (%) n = 81	p-value
Sex			
Male	56 (70.8)	55 (67.9)	
Female	23 (29.2)	26 (32.1)	
Age (years)	62.3 ± 12.3	61.2 ± 13.1	0.49
Weight (kg)	66.2 ± 14.1	65.7 ± 12.9	0.83
Height (cm)	160.5 ± 9.5	160.6 ± 8.5	0.91
Body mass index	25.6 ± 4.3	25.5 ± 4.7	0.95
Length of stay (days)	2.8 ± 3.2	3.0 ± 2.1	
Systolic blood pressure before discharge (mmHg)	123.4 ± 16.1	125.9 ± 16.2	0.33
Diastolic blood pressure before discharge (mmHg)	70.1 ± 10.7	68.7 ± 12.3	0.44
Heart rate (bpm)	69.1 ± 9.3	65.1 ± 9.8	0.11
Clinical diagnosis, n (%)			0.13
STEMI	8 (10.1)	17 (20.9)	
NSTEMI	23(29.1)	16 (19.8)	
Unstable angina	8 (10.1)	12 (14.8)	
Coronary Artery Disease	40 (50.7)	36 (44.6)	
Underlying Diseases, n (%)			
Diabetes mellitus	38 (48.1)	42 (51.9)	0.22
Hypertension	62 (74.5)	54 (66.6)	0.39
Dyslipidemia	59 (74.6)	53 (65.4)	0.36
CAD	65 (82.3)	67 (82.7)	0.24
Stroke	5 (6.0)	5 (6.2)	1.00
Smoking, n (%)	36 (45.6)	42 (51.9)	0.48
Previous PCI	36 (45.6)	29 (35.8)	0.33
Result CAG, n (%)			0.85
Single vessel disease	19 (24.1)	17 (21.0)	
Multiple vessel disease	60 (75.9)	64 (79.0)	
Function class			
Class I	14 (17.7)	7 (8.7)	
Class II	60 (76.0)	57 (70.3)	
Class III	5 (6.3)	17 (21.1)	
Class IV	0	0	
Ejection fraction (%)	56.5 ± 14.7	56.2 ± 13.8	0.93
Systolic blood pressure at 6 month follow-up	124.5 ± 17.3	116.3 ± 12.1	0.33
Diastolic blood pressure at 6 month follow-up	70.9 ± 9.1	65.8 ± 11.1	0.44

0.001), remains higher in the case group (Fig. 3). The rate of use of antiplatelets and statins is no different between two groups at post PCI, at discharge and 6 month follow-up. When looking at the quality of care indicators between two groups at 6 month follow-up, the patient with DM, CKD in the case group has better blood pressure control according to the guideline (64.5% vs. 35.1%, $p < 0.001$). Percentage of Hb A1C < 7, LDL < 100 was higher in the case group compare to the control group but not reach statistical significance (Table 3). Six-month readmission rate were higher in control group as compared to the case group (12.7% versus 5.2%, $p < 0.005$), Table 4.

Applied post PCI medical checklist help both improve adhering to the best practice guideline and clinical outcome.

Discussion

Our study has shown that the applied post PCI medical and healthcare educational checklist for secondary prevention of atherosclerosis resulted in greater adherence to the guidelines during admission and at the outpatient office. The use of angiotensin converting enzyme inhibitors and β-blocker was underutilized in the control group and resulted in less blood pressure control, according to the guidelines

Table 2. Laboratory results at baseline, before discharge and 6 month follow-up between two groups

Laboratory	Control group (%) n = 79	Case group (%) n = 81	p-value
Cholesteral (mg/dl)			
Baseline	174.5 ± 55.3	188.2 ± 41.5	0.52
Before discharge	165.6 ± 39.1	173.3 ± 71.5	0.86
6 month follow-up	167.2 ± 43.0	174.2 ± 48.7	0.54
Triglyceride (mg/dl)			
baseline	161.1 ± 82.7	140.1 ± 80.9	0.66
Before discharge	144.3 ± 25.7	127.6 ± 69.2	0.70
6 month follow-up	149.7 ± 83.0	131.8 ± 58.4	0.28
HDL (mg/dl)			
Baseline	47.5 ± 8.8	39.9 ± 14.2	0.24
Before discharge	38.6 ± 1.5	46.2 ± 16.9	0.47
6 month follow up	43.8 ± 11.2	48.1 ± 15.8	0.21
LDL (mg/dl)			
Baseline	93.7 ± 34.0	125.7 ± 33.0	0.07
Before discharge	108.4 ± 32.6	119.7 ± 48.5	0.72
6 month follow-up	118.3 ± 46.0	98.4 ± 42.3	0.33
Creatinine (mg/dl)			
Baseline	1.2 ± 0.4	1.3 ± 0.5	0.36
Before discharge	1.0 ± 0.3	1.1 ± 0.5	0.83
6 month follow-up	1.3 ± 1.1	1.2 ± 0.8	0.55
FBS (mg/dl)			
Baseline	134.2 ± 56.7	129.3 ± 55.4	0.85
Before discharge	102.6 ± 18.7	103.5 ± 25.7	0.95
6 month follow-up	114.6 ± 34.1	117.1 ± 44.2	0.80
HbA1c (%)			
Baseline	7.4 ± 0.5	6.6 ± 1.2	0.26
Before discharge	6.7 ± 0.3	6.1 ± 0.8	0.46
6 month follow-up	10.8 ± 6.3	7.5 ± 1.8	0.36

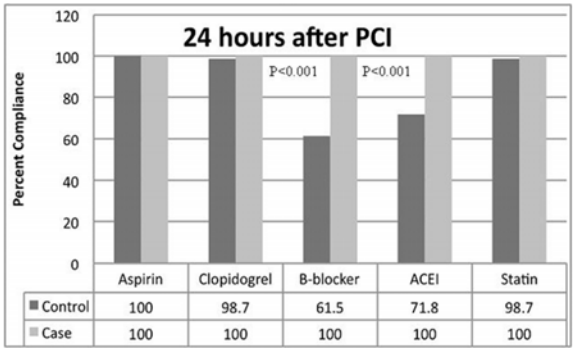

Fig. 1 The rate of use (in percentage) of Aspirin, Clopidogrel, β blocker, Angiotensin converting enzyme inhibitors and statins between the case group and the control group at 24 hours after PCI

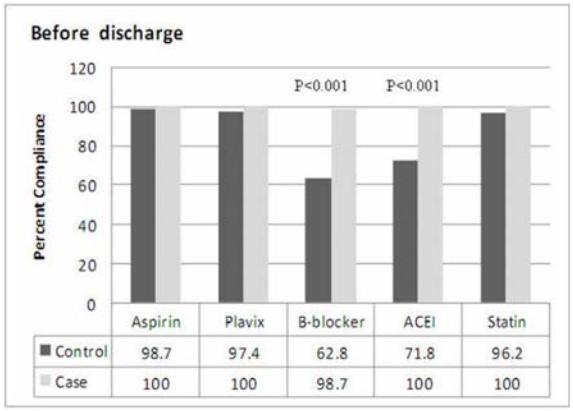

Fig. 2 The rates of use (in percentage) of Aspirin, Clopidogrel, β blocker, Angiotensin converting enzyme inhibitors and statins between the case group and the control group at hospital discharge

and eventually increased clinical events of unplanned readmission due to congestive heart failure and acute coronary syndromes. As reported from the 27th Bethesda Conference, multiple barriers such as physicians being focused on acute problems, time constraints, lack of training, poor communication

between specialist and primary care physician have all played roles in reducing implementation of appropriate therapy[16]. The impact of in-patient initiation cardiovascular protective medication on clinical outcomes and patients compliance have been supported by multiple studies[15,17-21]. The use of lipid lowering therapy was significantly improved from 6% to 86% in CHAMP trial after implement program utilized[15]. Study from OPUS-TIMI 16 has showed 90% of patient who have been started on statin remained on station at 10 month follow-up[18]. Corbelli et al, implemented the guideline based treatment critical pathway for acute coronary syndrome. In his observational study, he found that the use of appropriate medication was significant higher and one year adjusted mortality was significant reduced[21]. Post PCI medical checklist for secondary prevention of atherosclerosis will create a feedback loop among health care staffs as to whether appropriate medication was prescribed during admission and before hospital discharge. It also creates an opportunity for the patient to get the key message that adhering to medication and making life style modification could reduce their long-term chances of adverse cardiac events. A relative short education and counseling intervention has been shown to increase patient's knowledge and attitudes about coronary artery disease[22].

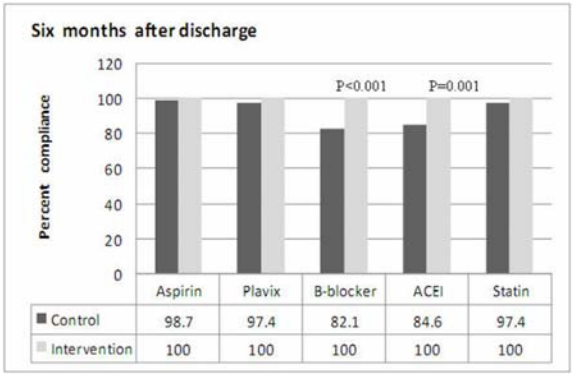

Fig. 3 The rates of use (in percentage) of Aspirin, Clopidogrel, β blocker, Angiotensin converting enzyme inhibitors and statins between the case group and the control group at 6 month follow-up

Acknowledgements

We greatly appreciate the cooperation and contribution from the nursing staff of Her Majesty Cardiac Center floor 8th and Cardiac Care Unit, Faculty of Medicine, Siriraj Hospital. This study is supported by the Routine to Research (R2R) Project, Faculty of Medicine, Siriraj Hospital, Mahidol University, Thailand

Potential conflicts of interest

None.

Table 3. Key quality of care indicators between the case group and control group at 6 month follow-up

	Control group n = 79 (%)	Case groupn = 81 (%)	p value
Percentage of patients that have LDL < 100	20 (25.3)	34 (42.0)	1.00
Percentage of patients that have HbA1c < 7	8 (10.1)	16 (19.8)	0.18
Percentage of patients that have			
BP < 140/90 mmHg	30/40 (75.0)	36/39 (92.3)	0.05
BP < 130/80 mmHg (patients with DM or CKD)	20/39 (51.2)	37 /42(88.0)	0.001
Percentage of patients that received Aspirin	78 (98.7)	81 (100)	1.00
Percentage of patients that received β-blocker	65 (82.1)	81 (100)	< 0.001
Percentage of patients that received ACEI	67 (84.6)	81 (100)	0.001
Percentage of patients that received Statins	77 (97.4)	81 (100)	0.497

Table 4. Six month follow-up clinical outcome between the two groups

	Control group (n = 79)	Case group (n = 81)	p-value
Unplanned Readmission	11 (13.9)	4 (4.9)	0.05
Caused			
- Congestive Heart Failure	4 (5.1)	1 (1.2)	
- Acute Coronary Syndrome	7 (8.9)	3 (3.7)	

References

1. DeWood MA, Spores J, Notske R, Mouser LT, Burroughs R, Golden MS, et al. Prevalence of total coronary occlusion during the early hours of transmural myocardial infarction. N Engl J Med 1980; 303: 897-902.
2. Randomised trial of intravenous streptokinase, oral aspirin, both, or neither among 17,187 cases of suspected acute myocardial infarction: ISIS-2. ISIS-2 (Second International Study of Infarct Survival) Collaborative Group. Lancet 1988; 2: 349-60.
3. Chen ZM, Pan HC, Chen YP, Peto R, Collins R, Jiang LX, et al. Early intravenous then oral metoprolol in 45,852 patients with acute myocardial infarction: randomised placebo-controlled trial. Lancet 2005; 366: 1622-32.
4. Dargie HJ. Effect of carvedilol on outcome after myocardial infarction in patients with left-ventricular dysfunction: the CAPRICORN randomised trial. Lancet 2001; 357: 1385-90.
5. Sacks FM, Pfeffer MA, Moye LA, Rouleau JL, Rutherford JD, Cole TG, et al. The effect of pravastatin on coronary events after myocardial infarction in patients with average cholesterol levels. Cholesterol and Recurrent Events Trial investigators. N Engl J Med 1996; 335: 1001-9.
6. Randomised trial of cholesterol lowering in 4444 patients with coronary heart disease: the Scandinavian Simvastatin Survival Study (4S). Lancet 1994; 344: 1383-9.
7. Schwartz GG, Olsson AG, Ezekowitz MD, Ganz P, Oliver MF, Waters D, et al. Effects of atorvastatin on early recurrent ischemic events in acute coronary syndromes: the MIRACL study: a randomized controlled trial. JAMA 2001; 285: 1711-8.
8. Cannon CP, Braunwald E, McCabe CH, Rader DJ, Rouleau JL, Belder R, et al. Intensive versus moderate lipid lowering with statins after acute coronary syndromes. N Engl J Med 2004; 350: 1495-504.
9. Effect of ramipril on mortality and morbidity of survivors of acute myocardial infarction with clinical evidence of heart failure. The Acute Infarction Ramipril Efficacy (AIRE) Study Investigators. Lancet 1993; 342: 821-8.
10. Kober L, Torp-Pedersen C, Carlsen JE, Bagger H, Eliasen P, Lyngborg K, et al. A clinical trial of the angiotensin-converting-enzyme inhibitor trandolapril in patients with left ventricular dysfunction after myocardial infarction. Trandolapril Cardiac Evaluation (TRACE) Study Group. N Engl J Med 1995; 333: 1670-6.
11. Ambrosioni E, Borghi C, Magnani B. The effect of the angiotensin-converting-enzyme inhibitor zofenopril on mortality and morbidity after anterior myocardial infarction. The Survival of Myocardial Infarction Long-Term Evaluation (SMILE) Study Investigators. N Engl J Med 1995; 332: 80-5.
12. Smith SC Jr, Allen J, Blair SN, Bonow RO, Brass LM, Fonarow GC, et al. AHA/ACC guidelines for secondary prevention for patients with coronary and other atherosclerotic vascular disease: 2006 update endorsed by the National Heart, Lung, and Blood Institute. J Am Coll Cardiol 2006; 47: 2130-9.
13. Peterson ED, Roe MT, Mulgund J, DeLong ER, Lytle BL, Brindis RG, et al. Association between hospital process performance and outcomes among patients with acute coronary syndromes. JAMA 2006; 295: 1912-20.
14. Bhatt DL, Steg PG, Ohman EM, Hirsch AT, Ikeda Y, Mas JL, et al. International prevalence, recognition, and treatment of cardiovascular risk factors in outpatients with atherothrombosis. JAMA 2006; 295: 180-9.
15. Fonarow GC, Gawlinski A. Rationale and design of the Cardiac Hospitalization Atherosclerosis Management Program at the University of California Los Angeles. Am J Cardiol 2000; 85: 10A-7A.
16. 27th Bethesda Conference. Matching the intensity of risk factor management with the hazard for coronary disease events. September 14-15, 1995. J Am Coll Cardiol 1996; 27: 957-1047.
17. Butler J, Arbogast PG, BeLue R, Daugherty J, Jain MK, Ray WA, et al. Outpatient adherence to beta-blocker therapy after acute myocardial infarction. J Am Coll Cardiol 2002; 40: 1589-95.
18. Cannon CP, McCabe CH, Bentley J, Braunwald E. Early statin therapy is associated with markedly lower mortality in patients with acute coronary syndromes: Observations from OPUS-TIMI-16 [abstract]. J Am Coll Cardiol 2001; 37 (Suppl A): 334A.
19. Fonarow GC, Gawlinski A, Watson KA, Moughrabi S. Sustained improvement in the treatment of cardiovascular hospitalization atherosclerosis management program: CHAMP. Circulation 2001; 104: II-711.
20. Pearson RR, Horne BD, Maycock CA, Lappe L, Kralick-Goldberg S, Bair TL, et al. An institutional discharge medication program reduces future

cardiovascular readmissions and mortality: An analysis of 43,841 patients with coronary artery disease [abstract]. J Am Coll Cardiol 2002; 39 (Suppl A): 452A.
21. Corbelli JC, Janicke DM, Cziraky MJ, Hoy TA, Corbelli JA. Acute coronary syndrome emergency treatment strategies: Improved treatment and reduced mortality in patients with acute coronary syndrome using guideline-based critical care pathways. Am Heart J 2009; 157: 61-8.
22. McKinley S, Dracup K, Moser DK, Riegel B, Doering LV, Meischke H, et al. The effect of a short one-on-one nursing intervention on knowledge, attitudes and beliefs related to response to acute coronary syndrome in people with coronary heart disease: a randomized controlled trial. Int J Nurs Stud 2009; 46: 1037-46.

Appendix 1.

แบบติดตามการดูแล **Checklist** Code number_____

Quality of Care Indicator in Recommendation ACC/AHA

Inhospital (24 hr) (กรอกข้อมูลโดยแพทย์ผู้ดูแล)

Health education

Smoking cessation	☐ Given	☐ Not given
Dietary control	☐ Given	☐ Not given
Physical activity	☐ Given	☐ Not given

Sign_____

Date_____

Medication

Aspirin

☐ Yes

☐ No If no, patient has contraindications

☐ Yes, patient has contraindication, please specify.....

☐ No contraindication

Clopidogrel (plavix)

☐ Yes

☐ No If no, patient has contraindications

☐ Yes, patient has contraindication, please specify.....

☐ No contraindication

Beta Blocker

☐ Yes

☐ No If no, patient has contraindications

☐ Yes, patient has contraindication, please specify.....

☐ No contraindication

ACEI or ARB

☐ Yes

☐ No If no, patient has contraindications

☐ Yes, patient has contraindication, please specify.....

☐ No contraindication

Statin

☐ Yes

☐ No If no, patient has contraindications

☐ Yes, patient has contraindication, please specify.....

☐ No contraindication

Sign_____

Date _____

Pre-Discharge (กรอกข้อมูลโดยแพทย์ผู้ดูแล)

Health education

Smoking cessation	☐ Given	☐ Not given
Dietary control	☐ Given	☐ Not given
Physical activity	☐ Given	☐ Not given

Sign_____

Date _____

Medication

Aspirin

☐ Yes

☐ No If no, patient has contraindications

☐ Yes, patient has contraindication, please specify.....

☐ No contraindication

Clopidogrel (plavix)

☐ Yes

☐ No If no, patient has contraindications

☐ Yes, patient has contraindication, please specify.....

☐ No contraindication

Beta Blocker
- ☐ Yes
- ☐ No If no, patient has contraindications
  - ☐ Yes, patient has contraindication, please specify…….
  - ☐ No contraindication

ACEI or ARB
- ☐ Yes
- ☐ No If no, patient has contraindications
  - ☐ Yes, patient has contraindication, please specify…….
  - ☐ No contraindication

Statin
- ☐ Yes
- ☐ No If no, patient has contraindications
  - ☐ Yes, patient has contraindication, please specify…….
  - ☐ No contraindication

Sign_____
Date _____

Follow-up 6 months **Date to follow-up** __ __ -__ __-__ __ __ __

1. Survival status ☐ **Alive** ☐ **Death**

2. Readmission ? ☐ **No…….**

☐ **Yes, when (date)…….. cause of readmission ……..**

3. BP…….mmHg weight……kgs

Health education

Smoking cessation	☐ Given	☐ Not given
Dietary control	☐ Given	☐ Not given
Physical activity	☐ Given	☐ Not given

Sign_____
Date _____

Medication

Aspirin
- ☐ Yes
- ☐ No If no, patient has contraindications
  - ☐ Yes, patient has contraindication, please specify…….
  - ☐ No contraindication

Clopidogrel (plavix)
- ☐ Yes
- ☐ No If no, patient has contraindications
  - ☐ Yes, patient has contraindication, please specify…….
  - ☐ No contraindication

Beta Blocker
- ☐ Yes
- ☐ No If no, patient has contraindications
  - ☐ Yes, patient has contraindication, please specify…….
  - ☐ No contraindication

ACEI or ARB
- ☐ Yes
- ☐ No If no, patient has contraindications
  - ☐ Yes, patient has contraindication, please specify…….
  - ☐ No contraindication

Statin
- ☐ Yes
- ☐ No If no, patient has contraindications
  - ☐ Yes, patient has contraindication, please specify…….
  - ☐ No contraindication

Sign_____
Date _____

การใช้แบบติดตามของการได้รับยาและการให้คำแนะนำด้านสุขภาพ ตามมาตรฐานการรักษาในผู้ป่วยโรคหลอดเลือดหัวใจที่ได้รับการใส่ขดลวดเพื่อรักษาหลอดเลือดหัวใจตีบ

อุษณีย์ เพ็ชรอ่อน, เสาวนีย์ เนาวพาณิช, อุมาพร พูลสวัสดิ์, อัครินทร์ นิมมานนิตย์, ณัฐวุฒิ วงษ์ประภารัตน์

ภูมิหลัง: *ปัจจุบันอัตราการตายในผู้ป่วยหลอดเลือดหัวใจตีบลดลงไปอย่างมาก เนื่องจากการรักษามีการพัฒนาและพบยาที่ช่วยลดอัตราการตายในผู้ป่วยเหล่านี้ลง ในผู้ป่วยหลอดเลือดหัวใจตีบ ยาที่ลดอัตราการตายประกอบด้วยยา aspirin, clopidogreal, ACE-I, β-blocker, statin และการให้คำแนะนำในการออกกำลังกายและหยุดบุหรี่ แต่จากการศึกษาพบว่าในผู้ป่วยหลอดเลือดหัวใจตีบถึง 20% ได้รับยาและคำแนะนำไม่ครบ ซึ่งส่งผลโดยตรงต่อภาวะหัวใจขาดเลือดซ้ำและอัตราการตายของผู้ป่วย*

วัตถุประสงค์: *เพื่อศึกษาการใช้แบบติดตามของการที่ได้รับยา และการให้คำแนะนำด้านสุขภาพตามมาตรฐานการรักษาจะสามารถทำให้ผู้ป่วยได้รับยาได้ครบตามมาตรฐาน ของการรักษาในผู้ป่วยหลอดเลือดหัวใจตีบที่ได้รับการรักษาโดยการใส่ขดลวดในหอผู้ป่วย ซี.ซี.ยู และหอผู้ป่วยศูนย์โรคหัวใจฯ ชั้น 8 โรงพยาบาลศิริราช*

วัสดุและวิธีการ: *การศึกษาครั้งนี้เป็นการศึกษาแบบ prospective cohort with historical controlled Cohort ในผู้ป่วยโรคหลอดเลือดหัวใจที่ได้รับการขยายหลอดเลือดหัวใจด้วยบอลลูน (Percutaneous Coronary Intervention หรือ PCI) ช่วงเดือนตุลาคม พ.ศ. 2551 ถึง มกราคม พ.ศ. 2553 โดยแบ่งเป็นสองกลุ่ม กลุ่มควบคุมเก็บข้อมูลในผู้ป่วยที่จำหน่ายกลับบ้านและมาตรวจที่ PCI คลินิก ณ เวลาประมาณ 6 เดือนหลังจำหน่าย หรือ ผู้ป่วยที่จำหน่ายกลับบ้านและเสียชีวิตก่อน follow-up 6 เดือน โดยเก็บข้อมูลจากเวชระเบียนย้อนหลัง กลุ่มทดลองจะได้รับการใช้แบบติดตามการดูแล (checklist) (ภาคผนวก) โดยแบ่งเป็น 3 ครั้ง คือ ครั้งที่ 1 ใน 24 ชั่วโมงหลังทำ PCI ครั้งที่ 2 ก่อนจำหน่ายกลับบ้าน ครั้งที่ 3 ติดตามหลังจำหน่าย 6 เดือน ที่ PCI คลินิก*

ผลการศึกษา: *ผู้ป่วยทั้งหมด 160 ราย แบ่งเป็นกลุ่มควบคุม 79 ราย, กลุ่มทดลอง (case) 81 ราย ในผู้ป่วยกลุ่มทดลองที่มีการใช้แบบติดตามของการได้รับยาและการให้คำแนะนำด้านสุขภาพจะได้รับการใช้ยา ACE-I, β-blocker ในช่วงระหว่างอยู่ในโรงพยาบาลมากกว่าในกลุ่มทดลอง (100% vs. 72%, $p < 0.001$ และ 100% vs. 61.5%, $p < 0.001$) เมื่อติดตามการรักษาที่ 6 เดือนการใช้ยา ACE-I และ β-blocker ก็ยังอยู่ในระดับที่สูงกว่า (100% vs. 84%, $p < 0.001$ และ 100% vs. 82%, $p < 0.001$) ผู้ป่วยกลุ่มทดลองโดยเฉพาะในผู้ป่วยเบาหวาน และผู้ป่วยโรคไตที่ควรมีระดับความดันโลหิตน้อยกว่า 130/80 มม.ปรอท พบว่าในกลุ่มทดลองสามารถควบคุมความดันโลหิตตามมาตรฐานการรักษาได้ดีกว่า (64.5% vs. 35%, $p < 0.001$) อัตราการเข้ารับการรักษาซ้ำจากภาวะหัวใจขาดเลือดหรือหัวใจวายพบว่าน้อยกว่าในกลุ่มควบคุมเทียบกับกลุ่มทดลอง (5.2% vs. 12.7%, $p < 0.005$)*

สรุป: *การใช้แบบติดตามของการได้รับยาและการให้คำแนะนำด้านสุขภาพตามมาตรฐานของการรักษาในผู้ป่วยโรคหลอดเลือดหัวใจที่ได้รับการใส่ขดลวดช่วยเพิ่มอัตราการเข้าถึงยา โดยเฉพาะในกลุ่ม ACE-I และ β-blocker มากขึ้น อีกทั้งยังช่วยลดอัตราการเข้ารับการรักษาซ้ำจากภาวะหัวใจขาดเลือดหรือหัวใจวายที่ 6 เดือน*