

การใช้แบบติดตามเพื่อพัฒนาแนวทางการดูแลผู้ป่วยโรคหลอดเลือดหัวใจที่ทำ **Percutaneous Coronary Intervention(PCI)**

**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)**

# Introduction

- Percutaneous Coronary Intervention (PCI) is standard of care for patients with significant CAD
- At Siriraj hospital we performed over 1,200 PCI annually

# Introduction

**Post PCI care is as important as operation**

**According to ACC/AHA recommendation**

- **Aspirin/Clopidogrel**
- **$\beta$ -Blocker**
- **Angiotensin-Converting Enzyme (ACE) Inhibitor or Angiotensin II Receptor Blocker (ARB)**
- **Statin**
- **Health education : Exercise , Smoking cessation ,Dietary control**

# Problem

Clinical Tracer Acute MI

Care team round

Aspirin 100%

Statin 85%

ACE Inhibitor or ARB 76%

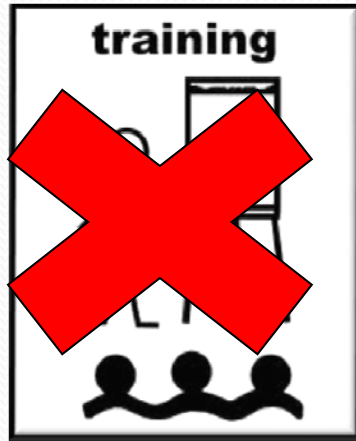
**$\beta$ -Blocker 60%**



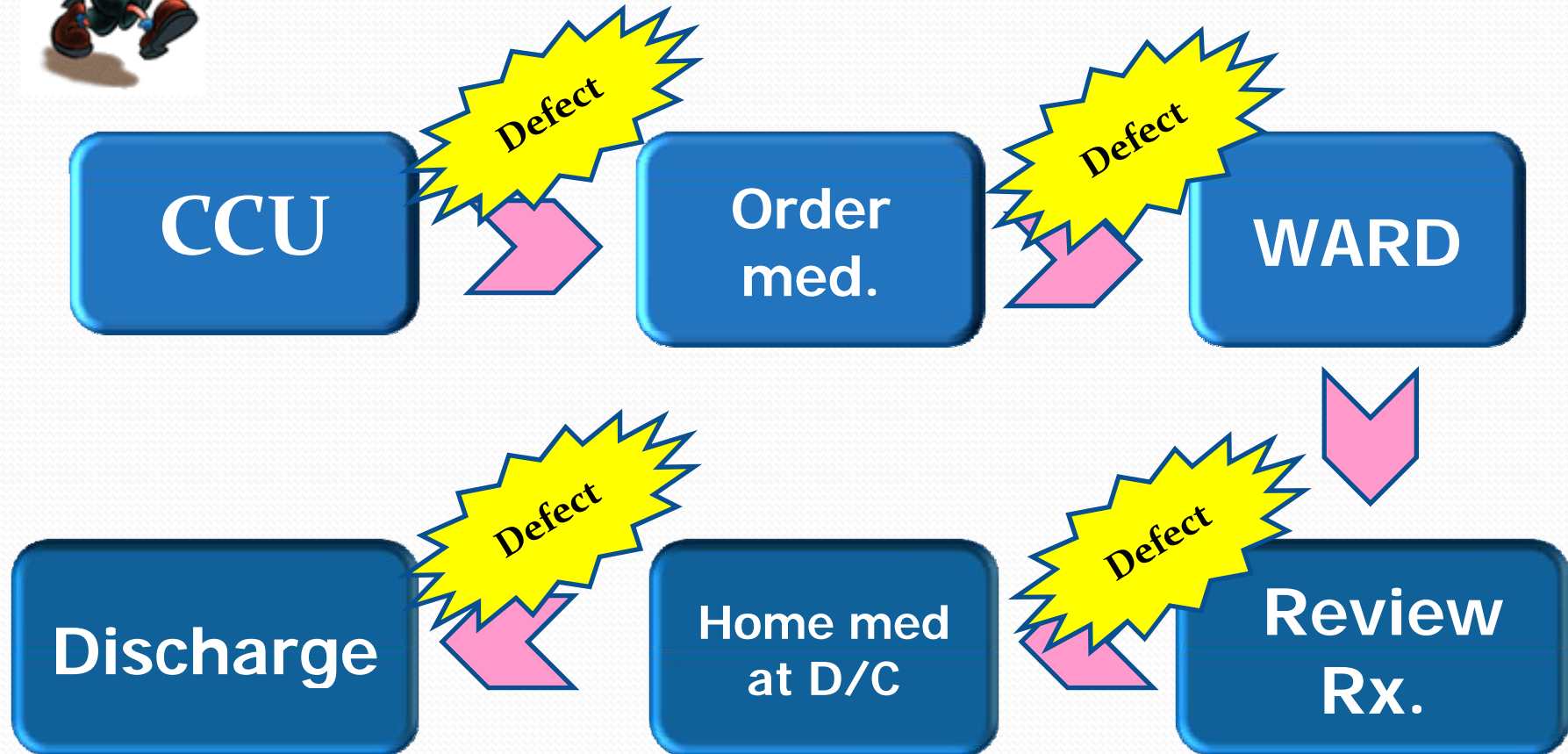
# Analyse causes

- Siriraj hospital is tertiary hospital was a lot of patient load
- As medical school, frequency rotate of resident/staff
- Communication failure with between staff

# HOW TO ?



# Flow : Patient care



# Literature Review

- - Alan M Wolff, Sally A Taylor and Janette F McCabe. *Using checklists and reminders in clinical pathways to improve hospital inpatient care.* The Medical Journal of Australia 2004 [www.mja.com.au](http://www.mja.com.au) ISSN: 0025-729X
  - Smit Vasaiwala, et al. *A quality guarantee in acute coronary syndromes: The American College of Cardiology's Guidelines Applied in Practice program taken real-time.* Am Heart J 2007; 153:16-21
- **Standardized work (Checklist)**



# How to create checklist

- Meeting team and discussion : Cardiologist  
Research team Head nurse
- Create checklist

แบบติดตามการดูแล (checklist)

Code number \_\_\_\_\_

Quality of Care Indicator ตาม 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

แบบติดตามการดูแล (checklist)

Code number \_\_\_\_\_

Quality of Care Indicator ตาม 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



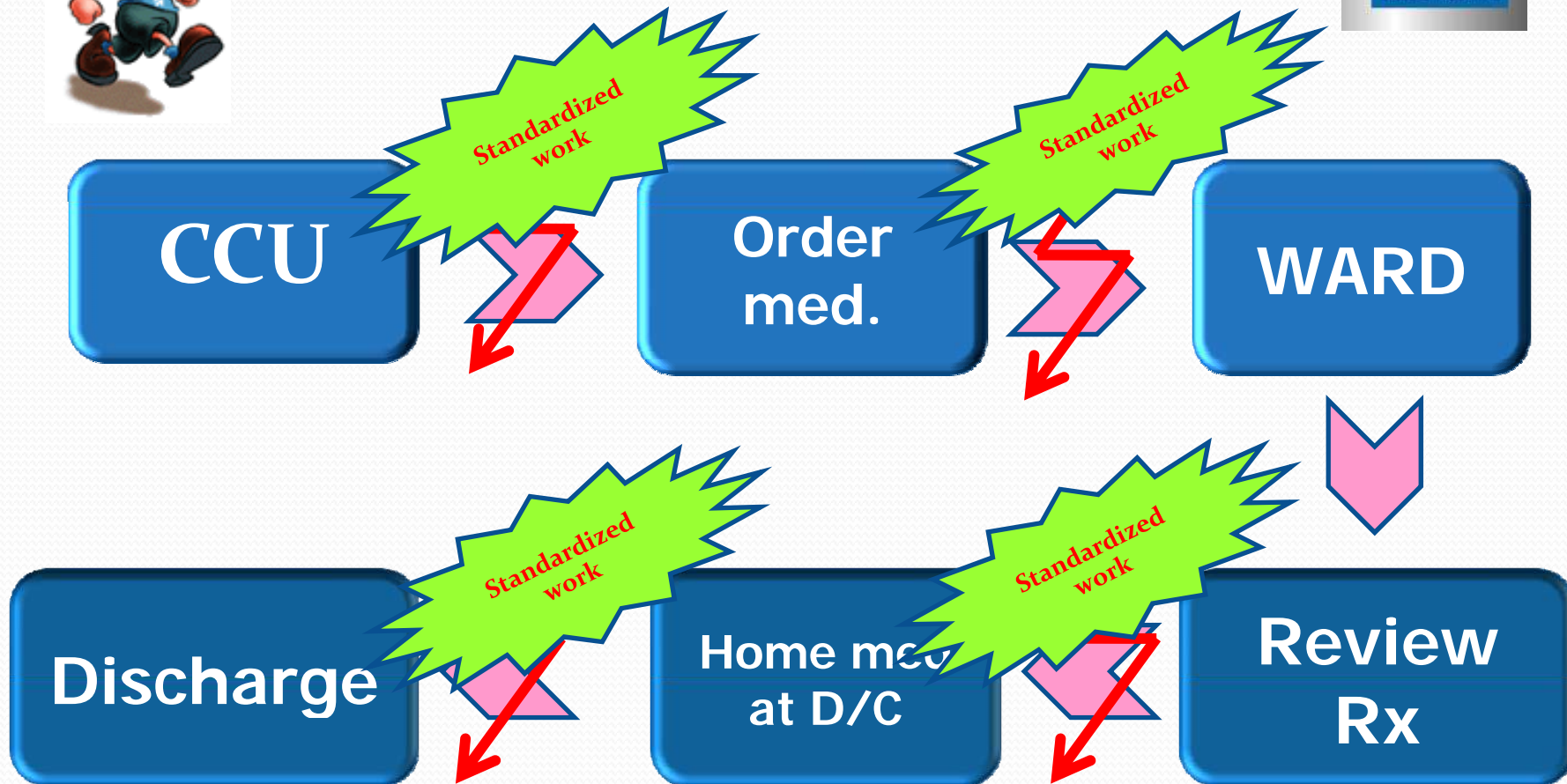
# Apply checklist to practice

- **Collaboration**

**Fellow Resident Nurse**

- **Training**
- **Policy**
- **Audit**

# Flow : Patient care



# Objective

To investigate whether an applied medical checklist which included medications (aspirin, clopidogrel,  $\beta$ -blocker, statin), health education (smoking cessation, dietary control and physical activity) as recommended by ACC/AHA guidelines

# Study protocol



Oct. 2008-March 2009

Aug.2009-Jan 2010

Health education and Medication

- 24 hours after admit
- Before D/C
- six months after D/C

แบบติดตามการดูแล (checklist)

Code number \_\_\_\_\_

Quality of Care Indicator ตาม 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

แบบติดตามการดูแล (checklist)

Code number \_\_\_\_\_

Quality of Care Indicator ตาม 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

แบบติดตามการดูแล (checklist)

Code number \_\_\_\_\_

**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

แบบติดตามการดูแล (checklist)

Code number \_\_\_\_\_

**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

Date \_\_\_\_\_



แบบติดตามการดูแล (checklist) Code number \_\_\_\_\_

**Follow up 6 month**    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 \_\_\_\_\_

**Medication**

Aspirin

Yes

No If no, patient has contraindications

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

Date \_\_\_\_\_

แบบติดตามการดูแล (checklist) Code number \_\_\_\_\_

**Follow up 6 month**    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 \_\_\_\_\_

**Medication**

Aspirin

Yes

No If no, patient has contraindications

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

No contraindication

Code number 0001

**มาตรฐานการตรวจ (checklist)**

**Quality of Care Indicator with Recommendation ACC/AHA**  
**In-hospital (24 hr) (ก่อนส่งผู้ป่วยกลับบ้าน)**

**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 have contraindication  
 Yes, patient has contraindication, please specify.....  
 No contraindication

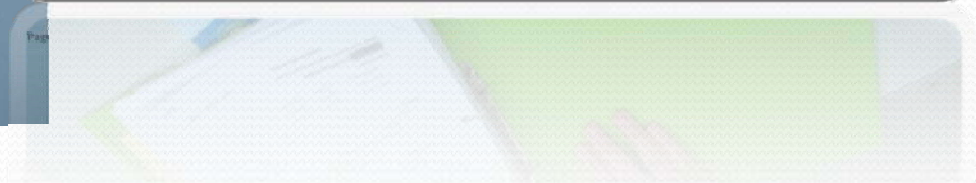
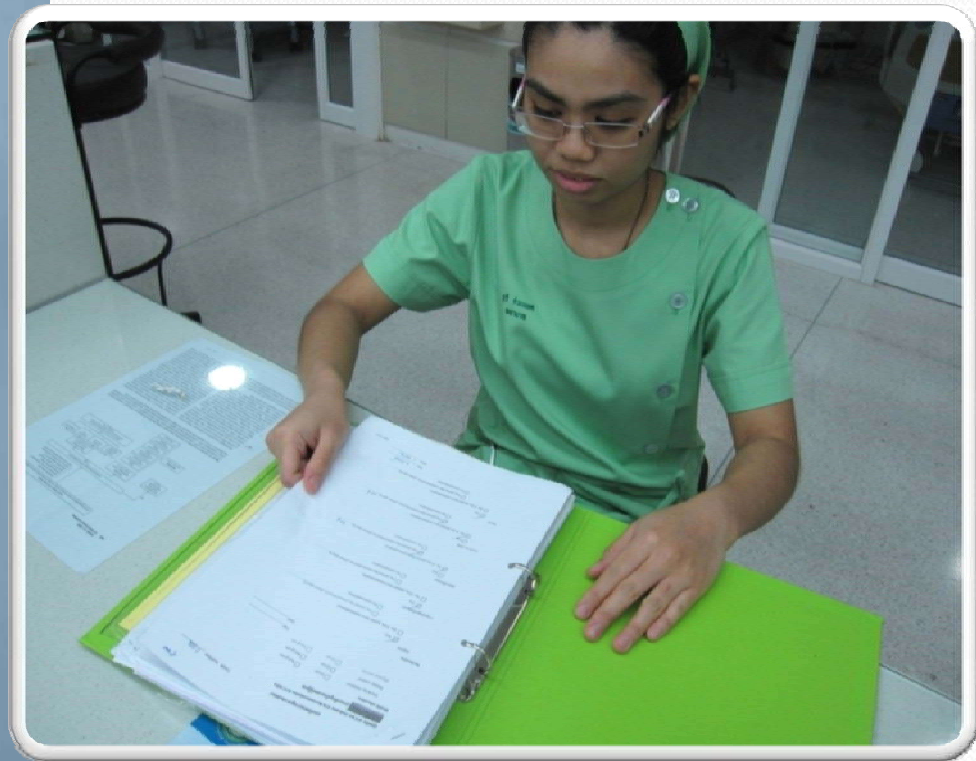
**Clopidogrel (plavix)**  
 Yes  
 No If no, patient have contraindication  
 Yes, patient has contraindication, please specify.....  
 No contraindication

**Beta Blocker**  
 Yes  
 No If no, patient have contraindication  
 Yes, patient has contraindication, please specify... P.P.L.  
 No contraindication

**ACEI or ARB**  
 Yes  
 No If no, patient have contraindication  
 Yes, patient has contraindication, please specify... P.P.L.  
 No contraindication

**Statin**  
 Yes  
 No If no, patient have contraindication  
 Yes, patient has contraindication, please specify.....  
 No contraindication

Sign N. Jitnong  
Date 1 AUG 20



# Sample size

**The study consisted of 160 cases**

- **79 cases in Control group**
- **81 cases in Intervention group**

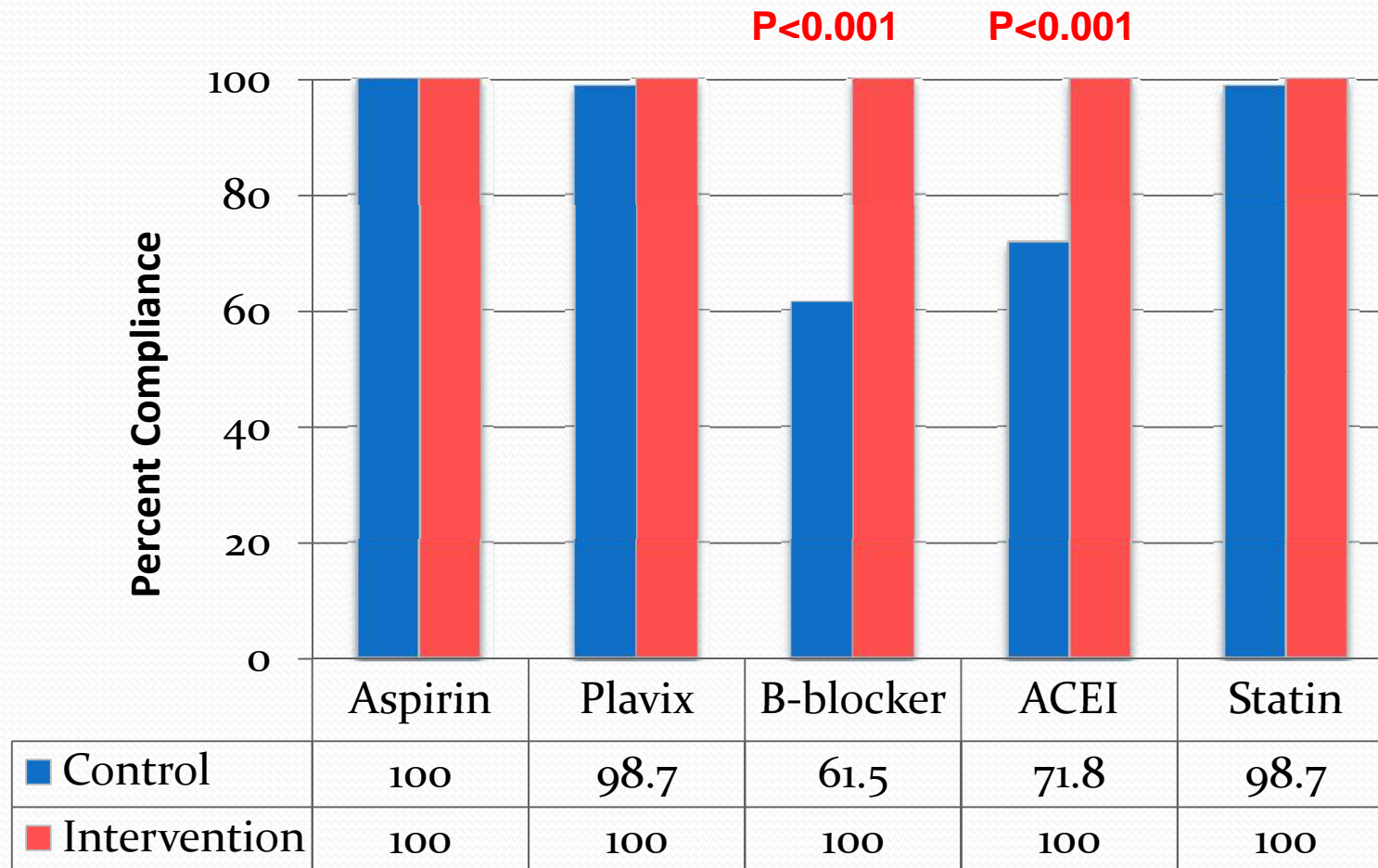


# Result

## Baseline demographics between two groups (n = 160)

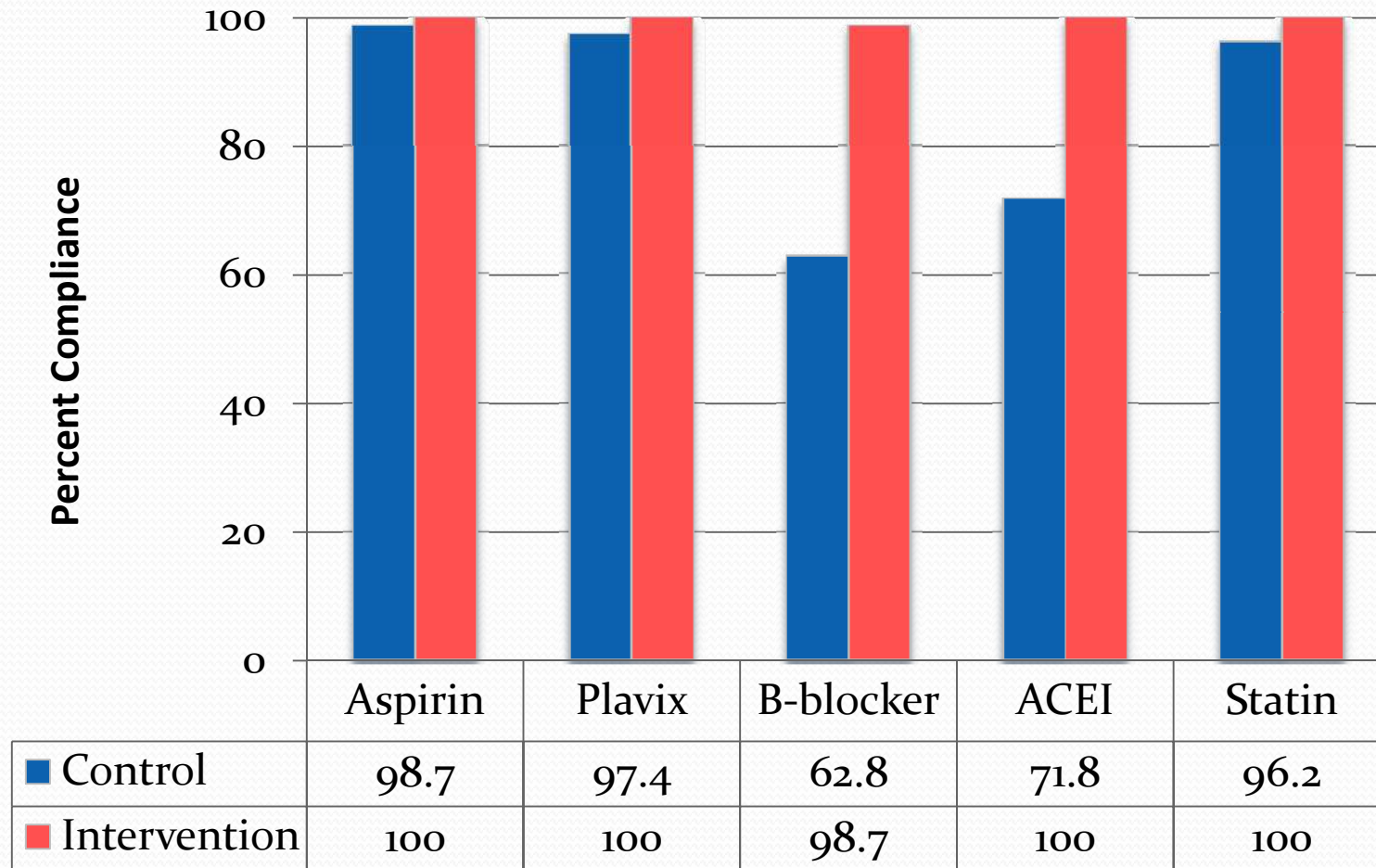
Characteristics	Control n=79 (%)	Intervention n=81 (%)	P value
<b>Sex</b>			<b>0.302</b>
Male	56 (70.8)	55 (67.9)	
Female	23 (29.2)	26 (32.1)	
<b>Age ( mean <math>\pm</math> SD)</b>	<b>62.3<math>\pm</math>12.3</b>	<b>61.2<math>\pm</math>13.1</b>	<b>0.492</b>
<b>Underlying Disease, n (%)</b>			
Diabetes mellitus	38 (48.7)	42 (53.9)	0.219
Hypertension	62 (79.5)	54 (69.2)	0.394
Dyslipidemia	59 (75.6)	53 (67.9)	0.364
CAD	65 (83.3)	67 (85.9)	0.241
Stroke	5 (6.4)	5 (6.4)	1.000
Smoking	36 (46.2)	42 (53.8)	0.477
<b>Previous PCI</b>	<b>36 (46.2)</b>	<b>29 (37.2)</b>	<b>0.330</b>
<b>Result CAG</b>			<b>0.849</b>
Single vessel disease	19 (24.1)	17 (21.0)	
Multiple vessel disease	60 (75.9)	64 (79.0)	

# 24 Hours after PCI

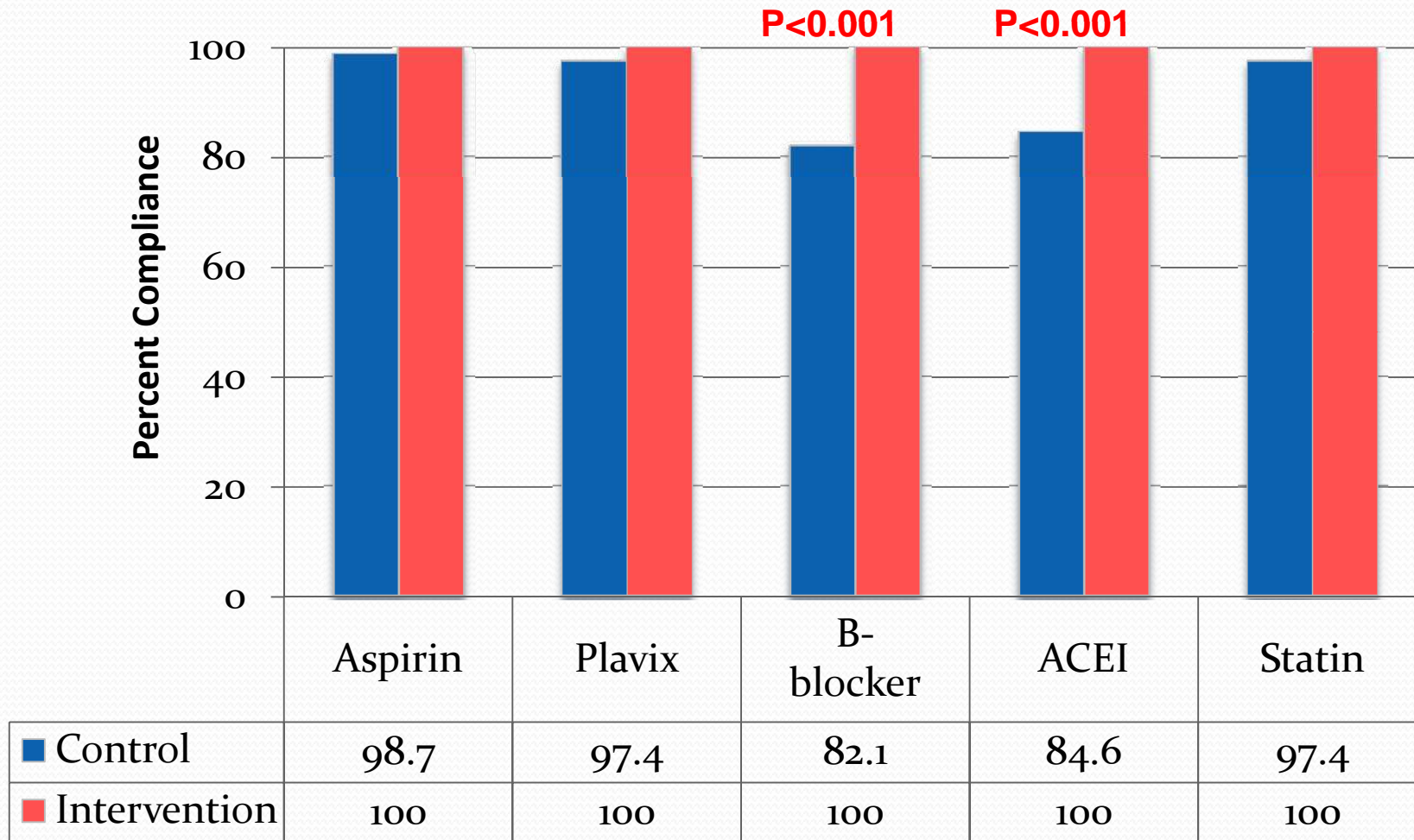


# Before discharge

P<0.001 P<0.001



# Six month after discharge





# Effects of changes

Six month follow-up clinical outcome between two groups

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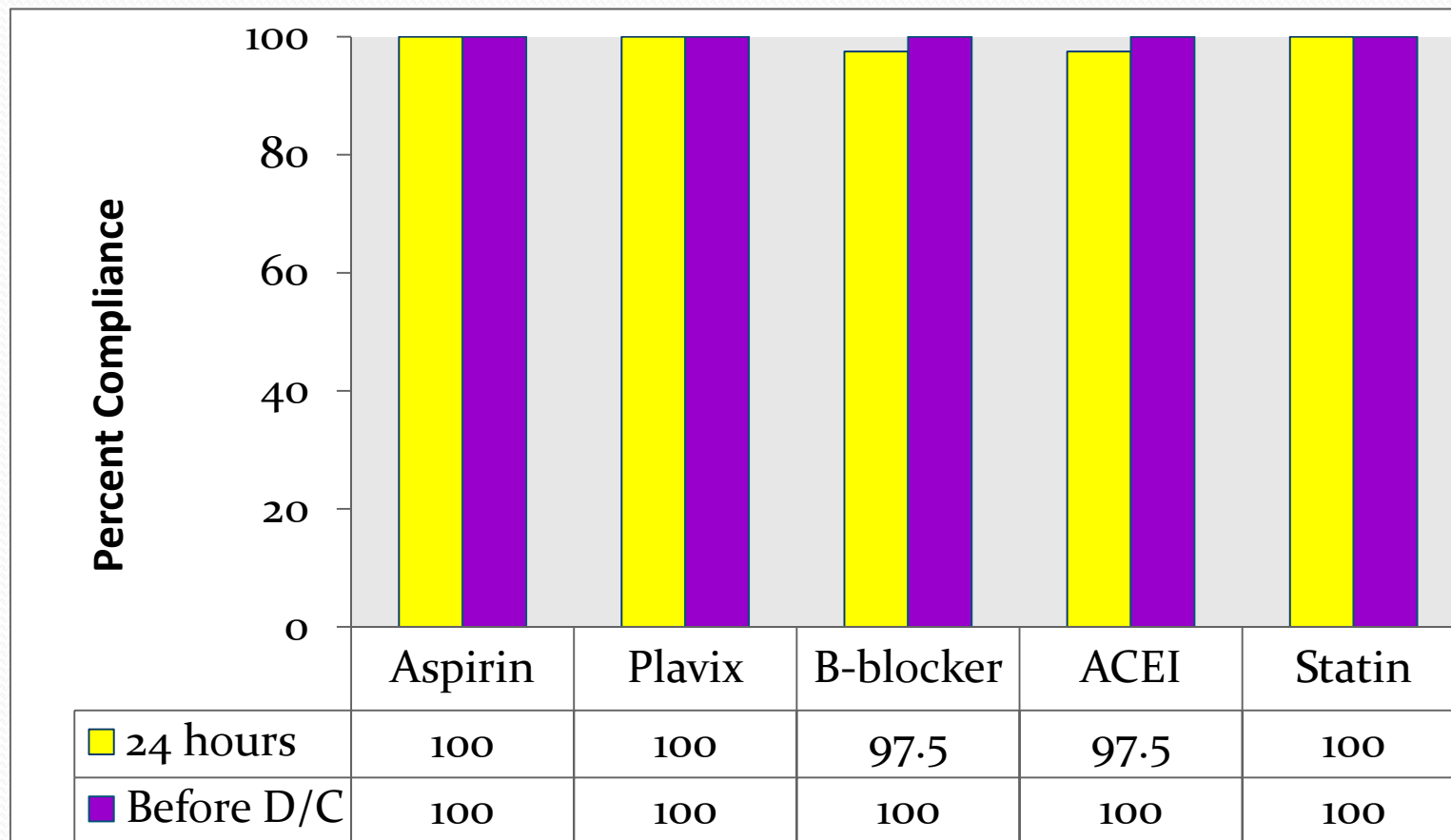
	Control ( n=79)	Intervention ( n=81)	<i>P</i> value
<b>Unplanned Readmission</b>	<b>11 (14.2)</b>	<b>4 (5.2)</b>	<b><i>0.05</i></b>
<b>Cause of unplanned readmission</b>			
- Congestive Heart Failure	4 (5.3)	1(1.4)	
- Acute Coronary Syndrome	7 (8.9)	3 (3.8)	

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

	Control n=79 (%)	Intervention n = 81 (%)	<i>p</i> value
Percentage of patients that have LDL < 100	20 (71.4)	34 (72.3)	1.000
Percentage of patients that have HbA1c < 7	8 (47.1)	16 (72.7)	0.184
Percentage of patients that have			
- BP < 140/90 mmHg	35 (49.3)	36 (50.7)	<b>0.05</b>
- BP < 130/80 mmHg (patients with DM or CKD)	20 (35.1)	37 (64.9)	<b>0.001</b>

# Quality control after the study completed 6 months



# 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)

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**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 percutaneous 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 whom underwent PCI between May 2009 and January 2010) at Her Majesty Cardiac Center floor 8<sup>th</sup> 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%,  $p < 0.001$ ),  $\beta$  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  $\beta$  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%,  $p < 0.001$ ),  $\beta$  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

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*Full text, e-Journal: <http://www.mat.or.th/journal>*

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# Implementation

- Currently PCI checklist applied to all patients admit at Siriraj hospital for PCI
- Current use of ASA Clopidogrel Statin  
ACEI / ARB Beta-blocker 100%



# Lessons learnt

- PCI medical checklist for secondary prevention of atherosclerosis will create a feedback loop among health care staffs
- opportunity for the patient to get the key message that adhering to medication, life style modification could reduce their long-term event

# Success factors

- Team work
- Change crisis to opportunity
- Team support





R2R

Executives

CCU. STAFF





Thank you

Thank you