Original Article

The Impact of Right to Medical Care on the Treatment, Costs, and Outcomes of Patients with Acute ST-Segment Elevation Myocardial Infarction in Thammasat University Hospital

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Objective: To study clinical outcome and cost of treatment of patients presented with acute ST-segment elevation myocardial infarction (STEMI) amongst different medical coverage, civil servant reimbursement (CSR) and National universal coverage system (UCS), in Thammasat University Hospital.

Design: Retrospective cohort study.

Materials and Methods: Medical records of patients presented with acute ST elevation myocardial infarction (STEMI) in Thammasat University Hospital between January 2010 and December 2012 were reviewed. 89 patients were analyzed. Baseline characteristics, underlying disease, type of medical coverage, complications, treatment options and cost of treatment during hospitalization was collected and reported. The primary endpoint was the in-hospital mortality rate and the secondary endpoint was the cost of treatment and difference in management among these two medical coverages.

Results: A total of 89 patients were included in the present study. Types of medical coverage were civil servant reimbursement (CSR) (n = 34), National universal coverage system (UCS) (n = 43), Social Security insurance (n = 9) and other (n = 3). Compared to the patients with UCS, Patient with CSR had more hypertension (78.8% vs. 52.8%; $p = 0.02$) and dyslipidemia (69.7% vs. 44.4%; $p = 0.03$). Mortality rate during hospitalization were not different between groups (11.8% in CSR group and 11.6% in UCS group, $p = 1.00$). However, the cost of treatment were significantly higher in CSR group compared to UCS group in the total cost of treatment (349,974 baht in CSR group vs. 171,251 baht in UCS group; $p \leq 0.001$), cost of procedures (247,605 baht in CSR group vs. 106,772 baht in UCS group; $p \leq 0.001$) and non-formulary drug (8,089 baht in CSR group vs. 2,036 baht in UCS group; $p < 0.001$) but not different in terms of national formulary drugs (38,249 baht in CSR group vs. 19,046 baht in UCS group; $p = 0.74$), Laboratory investigations (14,737 baht in CSR group vs. 13,266 baht in UCS group; $p = 0.63$), and the cost of medical equipment (13,887 baht in CSR group vs. 13,232 baht in UCS group; $p = 0.17$).

Conclusion: The in-hospital mortality rates were not different between STEMI patients with CSR and UCS. However, the overall cost of treatment of STEMI in patients with CSR medical coverage was higher than those with UPS medical coverage.

Keywords: Right to medical care, Acute ST-segment elevation myocardial infarction, STEMI, Universal coverage system, Civil servant reimbursement, Cost of treatment

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The majority of health care services in Thailand is delivered by the public sector. Universal health care in Thailand is provided through three programs: the civil service reimbursement system (CSR) for civil servants and their families, Social Security welfare system (SSS) for private employees, and the national universal coverage scheme (UCS) theoretically available to all other Thai nation. The average annual payment per case was different among these three medical coverages. Average annual payment per case was 11,000 baht for the CSR, 2,612 baht for SSS and 2,100 baht for UCS[1,2]. There was concern in the difference in quality and the results of treatment among these 3 systems.

Coronary heart disease is a major cause of death that is likely to increase every year since 1998. The cardiovascular disease is the second major health problem of Thailand, only second to the problem of HIV/AIDS infection, according to the Public Health Statistics from 1998 to 2000. The health statistic data showed that the mortality from ischemic heart disease in Thai population increased at the rate of 3.6, 7.9 and 10.1 per hundred thousand people, respectively. This is consistent with the Disability Adjusted

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Life Years study in 1999, which found that ischemic heart disease is the sixth leading cause of death for Thai men and the ninth leading cause of death in Thai women. Acute ischemic heart disease affected patients and their families in both the medical expenses and burden of care to the family.

Acute coronary syndrome (ACS) is a syndrome due to decreased blood flow in the coronary arteries such that part of the heart muscle is unable to function properly or dies. It is a common healthcare problem in Thailand and also in Thammasat University Hospital. The number of cases of acute coronary syndrome is increasing. Acute coronary syndrome can be divided into two types; based on the character of electrocardiographic change, ST-segment elevation and non-ST segment elevation coronary syndrome. The ST-segment elevation coronary syndrome or ST-segment myocardial infarction (STEMI) is the most acute manifestation of coronary artery disease and is associated with great morbidity and mortality. A complete thrombotic occlusion caused from rupture of atherosclerotic plaque in an epicardial coronary vessel is the cause of STEMI in the majority of cases. Early diagnosis and immediate reperfusion are the most effective ways to limit myocardial ischemia and infarct size and thereby reduce the risk of post-STEMI complications and heart failure. Primary percutaneous coronary intervention (PCI) has become the preferred reperfusion strategy in patients with STEMI; if PCI cannot be performed within 120 minutes of STEMI diagnosis, fibrinolysis therapy should be administered as an alternative therapy to dissolve the occluding thrombus[3-5]. The treatment of the emergent STEMI, both timing of treatment and results, are markers to reflect the quality of health service.

In Thammasat University Hospital, the majority of patients were in the civil service welfare system (CSS) and the universal coverage scheme (UPS). Whether patients' characteristics, management practices, in-hospital outcomes and cost of treatment of patients with acute coronary syndrome hospitalized to public hospital differ among patients with different rights to medical care is debated. The authors sought to determine the difference in patients' characteristics, in-hospital outcomes and cost of treatment of patients with STEMI between the CSR and the UCS in Thammasat University Hospital.

Objective

The primary objective of the present study was comparison results of treatment for STEMI between the patients in the CSR to the UCS. The secondary objective was to compare the cost of treatment in STEMI and differences in management among these two population groups in Thammasat University Hospital.

Materials and Methods

The present study was a retrospective descriptive study. Inclusion criteria were a patient who was diagnosed with acute ST-segment elevation myocardial infarction, aged 15 years and older and had been treated at Thammasat University Hospital between 1 January 2010 and 31 December 2012.

The present study was based on de-identified data collected from a hospital database and does not contain any studies with human participants by any of the authors; therefore, informed consent was not obtained.

Research procedure started from searching the name of the patient from the medical registration system in the hospital information system using ICD10 code I21.0-4, and from the list of patients presented with ST-segment elevation coronary syndrome in the record of the cardiac catheterization laboratory. The indications for screening patients into the research were age older than 15 years and had been diagnosed with ST-segment elevation myocardial infarction. Exclusion criteria were patients who were not exercising rights to civil servant medical benefits or general health insurance, and who did not receive treatment at Thammasat University Hospital until completion of treatment.

The relevant information has been collected including the basic patient information such as age, gender, medical conditions, smoking status, history of heart disease, the clinical information such as treatment methods and treatment outcome, death rate, complications, hospital length of stay and cost of treatment information which were classified by different categories, and right of medical system used.

Endpoints

The study endpoint was the in-hospital mortality rates during the admission in patients with STEMI, the cost of treatment in STEMI and difference in management among these two population groups, CSR and UCS, in Thammasat University Hospital.

Statistical analysis

Basic general information of patients were studied and displayed as a percentage in the enumerated data and mean $\pm$ standard deviation (mean $\pm$ SD) in continuous data. The comparison of the enumerated data between groups was done by using Chi-square or Fisher-exact tests. The comparison of continuous data between groups was performed by using the student t-test. The *p*-value which is considered statistically significant is <0.05. Statistical data analysis used was SPSS for Windows version 19. The present study was reviewed and accepted by the Human Ethics Committee of Thammasat University before conducting research.

Results

From January 1, 2010 to December 31, 2012, 97 patients presented with STEMI. 4 patients were referred to other hospital according to right of medical system before discharge from the hospital. The medication records were lost or incomplete for four patients. A total of 89 patients were included to study. Among these included patients, 34 patients were CSR, 43 patients were UCS, 9 patients were social security system, and those who did not exercise any

right of a medical system (self-payment) in these remaining 3 patients.

According to the baseline characteristic data of interested populations (Table 1), the average age of patients in CSR group and UCS group was 64.21 years and 60.48 years, consecutively. The major gender proportion of patients is male in both groups. Hypertension, dyslipidemia and diabetes mellitus were the common risk factors. In the CSR group, there was a significantly higher number of patients with high blood pressure (CSR = 78.8%, UCS = 52.8%; p = 0.02) and hyperlipidemia (CSR = 69.7%, UCS = 44.4%; p = 0.03) than the UPS group. There were more smokers in the UCS group. There was no difference in the incidence of chronic kidney disease and left ventricular ejection fraction.

The comparison of treatment in both groups (Table 2) showed that overall 50% of the patients received revascularization. In the CRS group, 50% of patients received primary PCI, 44% were treated with fibrinolytic drugs, and most of these fibrinolytic groups received cardiac catheterization afterward. While in the UCS group, 38% of patients received primary PCI, 62% were treated with fibrinolytic drugs, and most of these fibrinolytic groups received cardiac catheterization afterward as well. There was non-significant longer door to needle and door to balloon time in UPS group.

The hospital outcome results showed that (Table 3) the complications of both groups of patients were not significantly different. The average number of hospitalization days of patients in the CSR and UCS groups were 5 days and 6 days consecutively, p = 0.95. There were 4 deaths of CSR patients, representing 11.8% and 5 people in the UPS group, representing 11.6% (p = 1.00), which were a similar rate.

For the cost of treatment (Table 4), the top five highest cost in the treatment of STEMI were cost of coronary intervention procedure (CSR = 247,605 baht, UCS = 106,772 baht; p<0.001), cost of medicine in the National List of Essential Medicines (CSR = 38,249 baht, UCS = 19,046

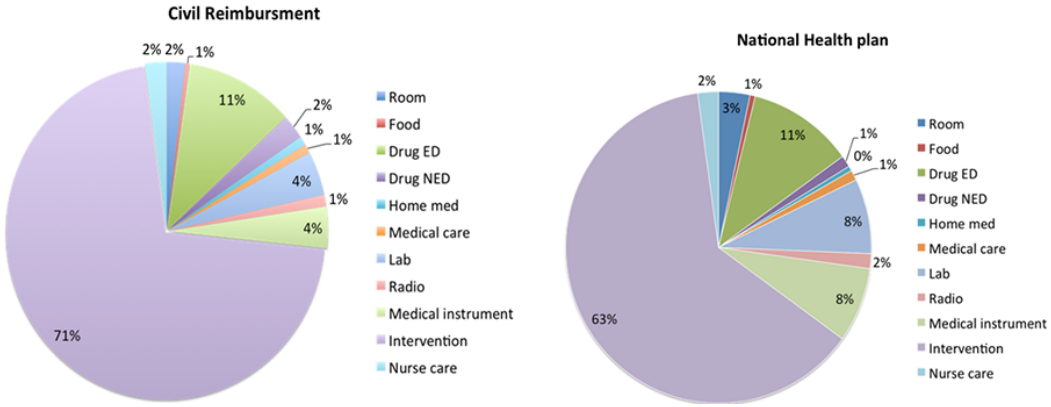

Figure 1. The detail of cost of treatment Civil service reimbursement (CSR) vs. National universal coverage service (UCS).

Table 1. Baseline characteristic

Demographics	Civil service reimbursement (CSR) n = 34	National universal coverage scheme (UCS) n = 43	p-value
Gender, n (%)			
Male	23 (67.60)	28 (65.10)	0.816
Female	11 (32.40)	15 (34.90)	
Age mean (SD)	64.21 (12.61)	60.48 (12.35)	0.165
Comorbidity n (%)			
Hypertension	26 (78.80)	19 (52.80)	0.023*
Diabetes mellitus	15 (45.50)	12 (32.40)	0.264
Known ischemic heart disease	3 (9.10)	9 (25.00)	0.082
Dyslipidemia	23 (69.70)	16 (44.40)	0.035*
Smoking	7 (23.30)	16 (45.70)	0.130
Chronic kidney disease	8 (24.20)	7 (20.00)	0.673
Creatinine median (interquartile range)	1.20 (0.58)	1.25 (0.60)	0.893
LVEF median (interquartile range)	50.00 (19.00)	43.50 (12.25)	0.16

Table 2. Treatment

Treatment	Civil service reimbursement (CSR) n = 34	National universal coverage scheme (UCS) n = 43	p-value
Fibrinolytic agent, n (%)	15 (44.10)	26 (61.90)	0.122
Primary PCI, n (%)	17 (50.00)	16 (38.10)	0.298
Rescue PCI, n (%)	13 (41.90)	14 (40.00)	0.873
Intraaortic balloon pump, n (%)	3 (10.70)	3 (8.80)	1.000
Coronary artery bypass graft surgery, n (%)	2 (7.10)	1 (2.90)	0.580
Door to needle time, median (interquartile range)	57.50 (60.50)	78.00 (48.00)	0.312
Door to balloon time, median (interquartile range)	98.50 (89.75)	144.00 (141.25)	0.061

Table 3. clinical outcomes

	Civil service reimbursement (CSR) n = 34	National universal coverage scheme (UCS) n = 43	*p*-value
Complications, n (%)			
Heart failure	5 (16.10)	10 (28.60)	0.229
Arrhythmia	5 (16.10)	6 (17.60)	0.870
Cardiogenic shock	5 (16.70)	4 (11.80)	0.723
Sepsis	6 (19.40)	3 (8.80)	0.290
Acute renal failure	6 (19.40)	11 (32.40)	0.234
Length of stay, median (interquartile range)	5.00 (6.00)	6.00 (8.00)	0.954
Death, n (%)	4 (11.80)	5 (11.60)	1.000

Table 4. Cost of treatment

Cost of treatment (Thai Baht)	Civil service reimbursement n = 34	National universal coverage scheme (UCS) n = 43	*p*-value
Room, mean (SD)	6,429.03 (5,204.56)	5,628.57 (10,255.36)	0.035*
Food, mean (SD)	1,458.06 (1,381.01)	954.76 (1,085.20)	0.057
Medications in essential drug list, mean (SD)	38,249.26 (50,189.48)	19,046.80 (18,063.41)	0.704
Medications in non-essential drug list, mean (SD)	8,089.56 (15,249.42)	2,036.74 (5,861.84)	<0.001*
Home medication cost, mean (SD)	2,958.44 (3,560.69)	866.79 (1,347.46)	0.002*
Medical care, mean (SD)	2,960.55 (5,795.86)	1,805.98 (2,215.05)	0.767
Laboratory cost, mean (SD)	14,737.90 (14,241.82)	13,226.07 (11,400.48)	0.635
Radiology service cost, mean (SD)	3,815.81 (8,342.84)	2,630.95 (5,037.07)	0.478
Medical instrument, mean (SD)	13,887.52 (22,885.70)	13,232.24 (23,876.93)	0.178
Coronary intervention cost, mean (SD)	247,605.90 (157,280.64)	106,772.52 (82,231.76)	<0.001*
Nursing care cost, mean (SD)	7,506.45 (10,200.76)	3,721.22 (9,016.97)	<0.001*
Total cost, mean (SD)	349,974.30 (249,963.55)	171,251.54 (132,355.77)	<0.001*

baht; $p = 0.7$), cost of laboratory investigation (CSR = 14,737 baht, UCS = 13,266 baht; $p = 0.63$), Cost of medical equipment (CSR 13,887 baht, UCS = 13,232 baht; $p = 0.17$) and cost of medicine in non-national list of essential medicines (CSR = 8,089 baht, NHP = 2,036 baht; $p \leq 0.001$). Among these five highest cost, there was significant higher cost in coronary intervention procedure cost (CSR = 247,605 baht, UCS = 106,772 baht; $p \leq 0.001$) and the non-national list of essential medicines (CSR = 8,089.56 baht, UPC = 2,036.74 baht; $p<0.001$). There was higher cost in the cost of home medication on discharge (CSR = 2,958.44 baht, NHP = 866.79 baht $p = 0.002$), and cost of nursing care (CR = 7,506.45 baht, NHP = 3721.22 baht; $p<0.001$). In overall total cost of treatment was significant double higher in CSR 349,974.30 baht compare to those of UCS 171,251.54 baht, $p<0.001$.

Discussion

When comparing data of this study with the data

of the Thai Acute Coronary Syndrome Registry (TACSR 1)[35]. Suphot Srimahachota, Rungsrit Kanjanavanit, Smonporn Boonyaratavej et al, Demographic, Management Practices and In-Hospital Outcomes of Thai Acute Coronary Syndrome Registry (TASCR). J Med Assoc Thai 2007;90 (Suppl. 1): 1-11, the median age of Thai patients presented with STEMI was 62.9 years, compared to the present study, the average age of CSR was 64.21 years and UCS was 60.48 years. The age was in a very similar age range.

There were a significantly higher number of patients with comorbidity in hypertension and hyperlipidemia in the CSR than those of the UPS group. For the treatment there was different in management between these two groups. In the CSR group, 50% of patients received primary PCI, while in the UCS group, 38% of patients received primary PCI. Most 60% of UCS patients presented with STEMI were treated with fibrinolytic drugs which is streptokinase. The difference in treatment pattern might be explained by many of these UCS patients were referred from the rural non-PCI capable hospital to the PCI center at Thammasat University hospital, which showed more time to therapy (time to needle in fibrinolysis cases and time to balloon in PCI cases) in the UCS group. The reason for being referred mostly included failed or no response to fibrinolytic therapy. The high incidence of rescue PCI, up to 40%, in both groups may be caused by the efficacy of streptokinase which is the main fibrinolytic agent available at that time period.

For the in-hospital outcome, there was no difference in the complication of acute coronary syndrome, complications from coronary procedure and especially the in-hospital mortality between the two groups (CSR group = 11.8%, UCS group = 11.6%; $p = 0.95$). When compared to our data, the average mortality rate of the Thai Acute Coronary Syndrome Registry (TACSR 1st time) (6) was 17 percent; the in-hospital mortality rate of Thammasat University Hospital was slightly better.

For the cost of treatment, from data of the Thai Acute Coronary Syndrome Registry (6), the average cost of treatment for STEMI was 82,848.5 baht. The cost for treatment of STEMI, which received a cardiac catheterization, was 161,096 baht. Compared to this research, the cost on average of the CSR group were 349,974.30 baht and 171,251.54 baht for the UCS group. The average cost is higher than those of Thai Acute Coronary Syndrome Registry because there was more coronary intervention procedures.

The cost of accommodation and nursing fees in the CSR group was a higher due to the higher fee rates of admission to the private or deluxe medical service. Overall the cost of treatment is higher in CSR group than those of UCS group because of the procedures of patients in the UCS group will not include the cost of coronary stents because the UPS purchased and provide the coronary stents to all hospital that have service for the UCS patients throughout the country. The average cost of drug-eluting coronary stent in UCS system at that time was 17,000 baht, compared with the drug-eluting coronary stent for patients in CSR system that had an average price of approximately 30,000 to 40,000 baht of which this may result in different expenses. With the marked difference in cost coronary stent, even adding the cost of coronary stents to the cost of coronary intervention procedure, the cost of procedure is still higher in CSR group. The largest portion of the cost of treatment for patients with STEMI was the cost of medical procedures.

For limitations of this study, first, the population of the study is still small due to collected data in the early years of cardiac catheterization service. Thammasat University Hospital only had opened the heart center and cardiac catheterization service in 2009. Second, in 2011, Thammasat University Hospital suffered from a major flood, caused hospital to quit service for 4 months. There was a loss of some medical information and some patients were required to be treated at other hospitals. Third, the research on the cost of drugs does not contain details of the drugs used in each group of patients. Fourth, this is a single center experience and data might not be applied to other hospitals and might not represent other hospitals in Thailand that vary in practice and services. And finally, the death rate in this study was only collected during the period of hospitalization. It does not mention the long-term mortality rate which may be needed for further research.

Conclusion

In comparison of treatment of patients presented with STEMI between patients with CSR and UCS, the number of days spent in the hospital and the rate of death were not different between the two groups. However, the cost of treatment for patients presented with STEMI in the patients with civil service reimbursement system was higher than those of the universal coverage scheme.

What is already known on this topic?

The majority of health care services in Thailand is provided through three programs: the civil service reimbursement system (CSR), Social Security welfare system (SSS), and the national universal coverage scheme (UCS). There was no information in the different in cost, quality & the result of treatment of acute ST segment elevation myocardial infarction among these 3 systems.

What this study adds?

For treatment of patients presented with acute ST segment elevation myocardial infarction, the number of days spent in the hospital and the rate of death were not different between the civil service reimbursement system (CSR) and the national universal coverage scheme (UCS). However, the cost of treatment of STEMI, in patients with CSR was higher than those in UCS patients.

Potential conflicts of interest

The authors declare no conflicts of interest.

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การศึกษาเปรียบเทียบผลการรักษาและค่าใช้จ่ายในภาวะกล้ามเนื้อหัวใจขาดเลือดแบบเอสทียก ระหว่างผู้ป่วยกองทุนสวัสดิการรักษาพยาบาล ข้าราชการ และกองทุนประกันสุขภาพทั่วหน้าในโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ

พิสิษฐ หุตะยานนท์, คณพล ภูมิรัตนประพิณ

วัตถุประสงค์: เพื่อเปรียบเทียบผลการรักษาภาวะกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันแบบเอสทียก (Acute ST segment elevation myocardial infarction, STEMI) ระหว่างผู้ป่วยที่ใช้สิทธิ์รักษาพยาบาลของกองทุนสวัสดิการรักษาพยาบาลข้าราชการ และผู้ป่วยที่ใช้สิทธิ์กองทุนหลักประกันสุขภาพทั่วหน้า และศึกษารายละเอียดค่าใช้จ่ายภาวะกล้ามเนื้อหัวใจขาดเลือดแบบเอสทียก (STEMI) ที่เกิดขึ้นในโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ

วัสดุและวิธีการ: เป็นการศึกษาแบบย้อนหลัง เชิงพรรณนาในผู้ป่วยโรคกล้ามเนื้อหัวใจขาดเลือดแบบเอสทียก ที่อายุมากกว่า 15 ปี และรับการรักษาในโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ ตั้งแต่วันที่ 1 มกราคม พ.ศ. 2553 ถึง วันที่ 31 ธันวาคม พ.ศ. 2555 โดยเก็บข้อมูลจากเวชระเบียน โดยเก็บข้อมูลผู้ป่วยโรคประจำตัว ภาวะแทรกซ้อนการรักษาที่ได้รับ ค่าใช้จ่ายระหว่างการรักษา โดยแสดงผลเป็นร้อยละในข้อมูลชนิดแจงนับ และค่าเฉลี่ย ± ส่วนเบี่ยงเบนมาตรฐาน (mean ± SD) เปรียบเทียบข้อมูลระหว่างผู้ป่วย 2 กลุ่ม โดยใช้ independent t-test สำหรับการเปรียบเทียบค่าเฉลี่ยของตัวแปร (mean of variables) ใช้สถิติ Pearson Chi-square และ Fisher's exact test และสำหรับเปรียบเทียบความสัมพันธ์ระหว่าง 2 ตัวแปร โดยถือค่า $p<0.05$ มีนัยสำคัญทางสถิติ

ผลการศึกษา: จากข้อมูลศึกษาผู้ป่วยโรคกล้ามเนื้อหัวใจขาดเลือดแบบเอสทียก ระหว่างวันที่ 1 มกราคม พ.ศ. 2553 ถึง วันที่ 31 ธันวาคม พ.ศ. 2555 มีผู้ป่วยจำนวน 89 ราย แบ่งเป็นผู้ป่วยสิทธิ์รักษาพยาบาลข้าราชการ (Civil service reimbursement, CSR) ได้จำนวน 34 ราย สิทธิ์ประกันสุขภาพทั่วหน้า (National universal coverage scheme, UCS) 47 ราย สิทธิ์ประกันสังคม (Social security medical coverage) 9 ราย สิทธิ์อื่นๆ 3 ราย ในการศึกษาเปรียบเทียบระหว่างกลุ่มสิทธิ์ข้าราชการเบิกได้และสิทธิ์ประกันสุขภาพทั่วหน้า จากผลข้อมูลประชากรพื้นฐานพบว่ามีภาวะความดันโลหิตสูงและภาวะไขมันในเลือดสูง ที่กลุ่มสิทธิ์ข้าราชการเบิกได้นั้นมีจำนวนมากกว่าอย่างมีนัยยะทางสถิติ ($p<0.005$) ผลการรักษาในด้านอัตราการเสียชีวิตในระหว่างที่นอนโรงพยาบาล (CSR = 11.8%, UCS = 11.6%) นั้นไม่มีความแตกต่างกันในทางนัยทางสถิติ ค่าใช้จ่ายในการรักษานั้นพบว่าผู้ป่วยกองทุนสวัสดิการรักษาพยาบาลข้าราชการมีค่าใช้จ่ายรวมในการรักษามากกว่าผู้ป่วยกองทุนสุขภาพทั่วหน้า (CSR = 349,974 บาท, UCS = 171,251 บาท; $p<0.001$) ค่าใช้จ่ายในการรักษานั้นเรียงลำดับสัดส่วนค่าเฉลี่ยจากมากไปหาน้อยห้าลำดับแรกคือ ค่าหัตถการ (CSR = 247,605 บาท, UCS = 106,772 บาท; $p<0.001$), ค่ายาในบัญชี (CSR = 38,249 บาท, UCS = 19,046 บาท; $p = 0.704$), ค่าผลตรวจทางห้องปฏิบัติการ (CR = 14,737 บาท, UCS = 13,266 บาท; $p = 0.63$), ค่าอุปกรณ์ทางการแพทย์ (CSR 13,887 บาท, UCS = 13,232 บาท, $p = 0.17$) และค่ายานอกบัญชี (CSR = 8,089 บาท, UCS = 2,036 บาท; $p<0.001$) โดยมีค่าหัตถการ ค่ายานอกบัญชี ค่าห้องพัก ค่าพยาบาลที่กลุ่มผู้ป่วยที่ใช้สิทธิสวัสดิการรักษาพยาบาลข้าราชการมีมูลค่าสูงกว่าอย่างมีนัยทางสถิติ

สรุป: เปรียบเทียบผลการรักษาในการรักษาโรคกล้ามเนื้อหัวใจขาดเลือดเฉียบพลันแบบเอสทียกระหว่างผู้ป่วยที่ใช้สิทธิ์รักษาพยาบาลของกองทุนสวัสดิการรักษาพยาบาลข้าราชการและผู้ป่วยสิทธิ์ประกันสุขภาพทั่วหน้า ไม่พบความแตกต่างของจำนวนวันนอนโรงพยาบาลและอัตราการเสียชีวิตระหว่างผู้ป่วยทั้งสองกลุ่ม แต่ค่าใช้จ่ายในการรักษาโรคกล้ามเนื้อหัวใจขาดเลือดแบบเอสทียกนั้นผู้ป่วยกลุ่มสิทธิ์สวัสดิการรักษาพยาบาลข้าราชการมีค่าใช้จ่ายที่มากกว่าผู้ป่วยกองทุนประกันสุขภาพทั่วหน้า