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## GYNAECOLOGY

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# The First Aid Solatium Payment Regarding Section 41 of 2002 National Health Security Act in Region 7 during 2012-2014 for Quality Improvement of the Health System and Guideline to Minimize the Problems in Obstetric and Gynecological Cases

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## ABSTRACT

**Objectives:** To analyze the medical diagnosis that led to payments of the first aid solatiums (FAS) regarding Section 41 of 2002 National Health Security Act (S41NHSA) in the region 7 of NHS Office (R7NHSO) and the magnitude in both number of cases and amount of money paid. To focus FAS cases and payment in the obstetric specialty which had the greatest part of FAS payment, and to find out the quality improvement for reducing the problems in obstetric and gynecological cases. The study was done for only during 2012-2014.

**Materials and Methods:** All of the FAS medical cases records regarding S41NHSA in the R7NHSO during 2012-2014 were collected. The medical diagnosis that led to the final approval of FAS

payment by NHSO was reviewed. The working group of the Sub-Committee to Control the Quality and Standard of the Public Health Service of the R7NHSO had created the guideline to minimize the problems in obstetric and gynecological cases.

**Results:** The R7NHSO included 4 provinces in the Northeast which are Khon Kaen, Kalasin, Roi Et, and Maha Sarakham. The numbers of FAS payment cases during 2012-2014 were 79, 106, and 110 cases or 295 cases in 3 years. The ratio of S41NHSA complaint per total number of in-patients was low but increasing yearly during this 3 years period. The province with more number of in-patients had a more FAS cases and a more FAS payment. The five most common FAS payment cases in descending rate were from department of obstetrics (54.38%), surgery (13.9%), medicine (10.5%) pediatric (7.4%) and orthopedics (3.73%). The obstetric department shared the greatest part of FAS payment cases and money. The top five number of cases (percentage) FAS payment in obstetrics were neonatal death 59 (30.73%), shoulder dystocia 41 (21.35%), unintended pregnancy after tubal ligation 40 (20.83%), maternal death 20 (10.42%) and cerebral palsy 6 (3.13%). The total amount of FAS money paid during the 2012-2014 was 54.68 million Baht for the whole R7NHSO, of which was from Khon Kaen 22.99 million Baht, Kalasin 12.89 million Baht, Roi Et 12.30 million Baht, and Maha Sarakham 6.49 million Baht. The average FAS payment was 185,361.36 Baht/case. The authors suggested 5 items of quality improvement methods to reduce obstetric loss.

**Conclusion:** The FAS cases and FAS payment in R7NHSO were rising. Most of the FAS cases and payment were from the department of obstetrics. Many diagnoses that caused FAS cases and payments were preventable. A good policy of man power arrangement of obstetricians, a continuously in-service training, and a better incentive for the service providers, the consultation and transferring system of the risky patients should be revised.

**Keywords:** The First Aid Solatium Payment (FAS Payment), Section 41 of 2002 National Health Security Act, Region 7 of NHSO, Obstetric FAS Payment

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## การจ่ายเงินช่วยเหลือเบื้องต้นตามมาตรา 41 ของพระราชบัญญัติหลักประกันสุขภาพแห่งชาติ พ.ศ. 2545 ในสำนักงานหลักประกันสุขภาพแห่งชาติเขต 7 ระหว่างปี พ.ศ. 2555-2557 เพื่อการพัฒนาระบบสุขภาพและแนวทางการลดปัญหาผู้ป่วยทางสูติศาสตร์และนรีเวชวิทยา

ยุทธพงศ์ วีระวัฒนตระกูล, สุชาติ พหลภาคย์, วัชรพงศ์ พุทธิสวัสดิ์, บุญส่ง พัจนสุนทร, พิเชฐฐ ลิละพันธ์เมธา, สุพัตรา สมจิตต์, สุพัฒน์ ธาตุเพชร, นาดยา มิลล์, สุพรรณิ ชีเลนเดอร์, สายใจ สายปัญญา

### บทคัดย่อ

**วัตถุประสงค์:** เพื่อวิเคราะห์คำวินิจฉัยโรคที่ทำให้ต้องจ่ายเงินช่วยเหลือตาม ม.41 พรบ. หลักประกันในเขต 7 ของสำนักงานหลักประกันสุขภาพแห่งชาติ (สปสช) วิเคราะห์จำนวนผู้ป่วยและจำนวนเงินที่จ่ายเพื่อช่วยเหลือ และเพื่อวิเคราะห์จำนวนผู้ป่วยและจำนวนเงินที่จ่ายเพื่อช่วยเหลือแก่ผู้ป่วยสูติศาสตร์เป็นการเฉพาะ เพราะสัดส่วนของการจ่ายเงินเพื่อช่วยเหลือนี้มีมากที่สุดเพื่อเสนอแนวทางคุณภาพในการลดปัญหาผู้ป่วยทางสูติศาสตร์และนรีเวชวิทยา การศึกษานี้ศึกษาเฉพาะช่วงปี พ.ศ. 2555-2557 เท่านั้น

**วัตถุประสงค์และวิธีการศึกษา:** ผู้วิจัยรวบรวมรายงานทางการแพทย์ที่เกี่ยวข้องกับ ม.41 พรบ. หลักประกันในเขต 7 ของ สปสช ระหว่างปี พ.ศ. 2555-2557 ผู้นิพนธ์จะทบทวนความถูกต้องของคำวินิจฉัยโรคที่ทำให้ สปสช ต้องจ่ายเงินช่วยเหลือคณาทานของอนุกรรมการควบคุมคุณภาพและมาตรฐานบริการสาธารณสุขระดับเขตพื้นที่เขต 7 ช่วยกันเสนอแนวทางลดปัญหาผู้ป่วยด้านสูติศาสตร์และนรีเวชวิทยา

**ผลการศึกษา:** เขต 7 สปสช ประกอบด้วยจังหวัดขอนแก่น กาฬสินธุ์ ร้อยเอ็ด และมหาสารคาม จำนวนผู้ป่วยที่ได้รับเงินช่วยเหลือในช่วง พ.ศ. 2555 พ.ศ. 2556 และ พ.ศ. 2557 คือ 79, 106 และ 110 ราย ตามลำดับ รวมเป็น 295 ราย จำนวนผู้ป่วยที่ได้รับเงินช่วยเหลือเทียบกับจำนวนผู้ป่วยในมีจำนวนไม่มาก แต่มีแนวโน้มเพิ่มขึ้นทุกปีในช่วง 3 ปีของการศึกษา จังหวัดที่มีจำนวนผู้ป่วยในมากจะมีจำนวนผู้ป่วยที่ได้รับเงินช่วยเหลือเบื้องต้นมาก และจำนวนเงินที่จ่ายก็มากตาม การจ่ายเงินเบื้องต้นมากเป็น 5 อันดับแรก เป็นการจ่ายให้แก่ผู้ป่วยสูติกรรม (ร้อยละ 54.38) ศัลยกรรม (ร้อยละ 13.9) อายุรกรรม (ร้อยละ 10.5) กุมารเวชกรรม (ร้อยละ 7.4) และออโรโธปิดิกส์ (ร้อยละ 3.73) หน่วยสูติกรรมมีจำนวนผู้ป่วยที่ได้รับเงินช่วยเหลือมากที่สุด และจำนวนเงินรวมที่จ่ายก็มากที่สุด สาเหตุทางสูติกรรม 5 อันดับแรก ที่ทำให้ต้องจ่ายเงินช่วยเหลือ ได้แก่ ทารกเสียชีวิตหลังคลอด 59 ราย (ร้อยละ 30.73) คลอดติดไหล่ 41 ราย (ร้อยละ 21.35) ตั้งครรภ์หลังการทำหมันหญิง 40 ราย (ร้อยละ 20.83%) มารดาเสียชีวิตจากการคลอด 20 ราย (ร้อยละ 10.42) ทารกที่คลอดมีภาวะสมองพิการ 6 ราย (ร้อยละ 3.13) ยอดเงินรวมของการช่วยเหลือเบื้องต้นช่วง 3 ปี ของ สปสช. เขต 7 คือ 54.68 ล้านบาท โดยเป็นจังหวัดขอนแก่น 22.99 ล้านบาท กาฬสินธุ์ 12.89 ล้านบาท ร้อยเอ็ด 12.30 ล้านบาท และมหาสารคาม 6.49 ล้านบาท คิดเป็นยอดเงินช่วยเหลือเบื้องต้นเฉลี่ยรายละ 185,361.37 บาท

คณะผู้วิจัยได้เสนอแนวทางพัฒนาระบบสุขภาพไว้ 5 ประการ เพื่อลดปัญหาการสูญเสียในทางสุติกรรม

**สรุป:** จำนวนผู้ป่วยที่รับเงินช่วยเหลือเบื้องต้นในเขต 7 สปสช. เพิ่มขึ้นเรื่อยๆ จำนวนผู้ป่วยและจำนวนเงินที่จ่ายเป็นการจ่ายให้แก่ผู้ป่วยสุติกรรมมากที่สุด คำวินิจฉัยโรคที่ทำให้ต้องจ่ายเงินช่วยเหลือเบื้องต้นจำนวนหลายราย สามารถป้องกันไม่ให้เกิดขึ้นได้ สมควรจะได้ทบทวนการจัดสรรอัตราค่าตัวของสุติแพทย์ ทบทวนการฝึกอบรมอย่างต่อเนื่อง ทบทวนการให้ค่าตอบแทนที่ดีขึ้นแก่ผู้ให้บริการและทบทวนระบบการปรึกษาและการส่งต่อผู้ป่วย

**คำสำคัญ:** การจ่ายเงินช่วยเหลือเบื้องต้นตามมาตรา 41 ของพระราชบัญญัติหลักประกันสุขภาพแห่งชาติ พ.ศ.2545, สำนักงานหลักประกันสุขภาพแห่งชาติ เขต 7, การจ่ายเงินช่วยเหลือเบื้องต้นทางด้านสุติกรรม

## Introduction

The Thai 2002 National Health Security Act (NHSa) has the main objectives as to provide the Thai people the standard of both public health and medical service and also to develop the continuous better Thai public health system<sup>(1)</sup>. Furthermore, the section 41 of this act had the intention to enable the National Health Security Office (NHSO) to pay the first aid solatium (FAS) compensation money to the patient or proxy who was damaged from the health care system. Regarding section 41 (S41NHSa), after the patient or proxy recognized the damage and believed to be from the health care system, the patient or the proxy can lodge a complaint within one year for the FAS from The Regional Section 41 subcommittee of NHSO (S41sCNHSO). If the regional S41sCNHSO agreed with the complaint it would proceed for the final approval from the National S41sCNHSO. Such FAS will be paid after the approval of the national S41sCNHSO. It will be paid without any trial of wrong performance of the medical provider(s). Just the damage was incurred from the medical treatment system in any of the nationwide of the NHSO hospitals or medical treatment units. The FAS has 3 levels: level 1 is to pay 240,000.00-400,000.00 Baht for the most severe damage, that is, death or severe permanent disability; level 2 100,000.00-240,000.00 Baht for the damage to any organ system or disability to impair daily life and level 3 is to pay not more than 100,000.00 Baht for the injury or the damage leading to the chronicity of the existing medical condition<sup>(2)</sup>. In the case of regular ANC and follow the standard of antenatal care until more than 37 week of gestation who suffers from fetal dead during intrapartum care process, the support is as level 1. In the case of pregnancy post tubal ligation the support is not more than 100,000 Baht.

The amount of payment was considered to be appropriate for the damage without any weighting between compensatory and punitive damage. Previously, no analysis of the root cause in an overall picture that necessitates the solatium payment was done. The Sub-Committee to Control the Quality and Standard of Public Health Service of the R7NHSO

meeting on 24 February 2015 had given the working group to find out the health claims follows the section 41 during 2012-2014. The aims were to find out the hot issue and create the guideline to minimize the problems.

## Materials and Methods

All of the FAS cases records regarding S41NHSa in R7NHSO during 2012-2014 were collected. The R7NHSO oversaw 4 provinces in the northeastern Thailand. These are Khon Kaen, Roi Et, Maha Sarakham and Kalasin. The case records were gathered by the R7NHSO secretariat. The statistical figures included: the annual number of FAS cases, the relevant medical service department, the amount of money paid for each FAS case. This study had the purpose to improve the health service system so the study was exempt from the ethical consideration according to the regulation of The Khon Kaen University Ethics Committee in human research<sup>(3)</sup>.(HE581137)

## Statistical analysis

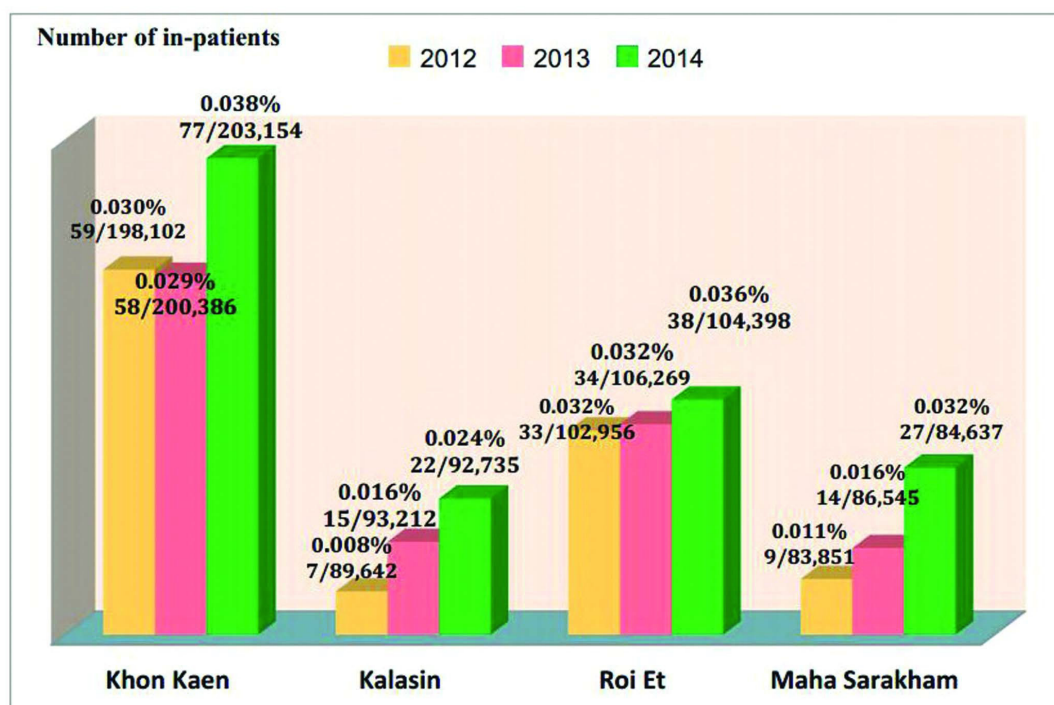
The statistical analysis was based on descriptive statistics, of which included number, amount, total number, total amount, the relevant percentage and if possible, mean and standard deviation (SD). The statistical tool used to analyze the data was Microsoft EXCEL.

## Results

All S41NHSa FAS cases in R7NHSO were from in-patient settings. The annual number of FAS cases for the whole R7NHSO was 79 for 2012, 106 for 2013 and 110 for 2014, making the total of 295 cases. For 2012 the number of FAS claim/the total number of in-patients or the relevant percentage of FAS claim for Khon Kaen, Roi Et, Maha Sarakham and Kalasin were 59/198,102 or 0.030%, 33/102,956 or 0.032%, 9/83,851 or 0.011% and 7/89,642 or 0.008% respectively; for 2013 they were 58/200,386 or 0.029%, 34/106,269 or 0.032%, 14/86,545 or 0.016% and 15/93,212 or 0.016% respectively; for 2014 they were 77/203,154 or 0.038%, 38/104,398 or 0.036%, 27/84,637 or 0.032% and 22/92,735 or 0.024% respectively. As the whole

R7NHSO for 2012 the number of FAS claim/the total number of in-patients, and the relevant percentage of FAS claim were 108/474,551, 0.027%; for 2013 121/506,412, 0.029%; for 2014 164/484,924, 0.034%. Each year, Khon Kaen province ranked the highest number of FAS cases. Some changes in the rank were noted during the 3 years of observation (Fig. 1). This figure showed that a more number of in-patients a more FAS cases. The total amount of FAS money paid during the 2012-2014 was 54.68 million Baht for the whole R7NHSO, of which was from Khon Kaen, Kalasin, Roi Et and Maha Sarakham province 22.99, 12.89, 12.30 and 6.49 million Baht respectively (Table 1). Khon Kaen ranked the most amount of FAS payment. The detail in Fig. 1 and Table 1 showed that a more number of in-patients a more amount of FAS payment. During the 3 years of study, the five most common FAS cases in descending percentage were from the department of obstetrics (54.38%), surgery (13.90%), medicine (10.5%), pediatrics (7.4%) and

orthopedics (3.73%). The obstetric department shared the greatest part of FAS payment cases and money (Table 2). Computing the number of FAS obstetric cases and their relevant FAS payment for the whole duration of study, Khon Kaen province still ranked the greatest number of cases and payment (65 cases and 10,607,000.00 Baht) followed by Kalasin (40 cases and 6,403,000.00 Baht), Roi Et (33 cases and 5,356,000.00 Baht) and Maha Sarakham (23 cases and 4,157,600.00 Baht) (Fig. 2). In the total 3 years of study and focus at the obstetric department, the number (and percentage) of FAS cases by neonatal death, shoulder dystocia, unintended pregnancy after tubal ligation (failed tubal ligation), maternal death and newborn cerebral palsy were 59 (30.73%), 41 (21.35%), 40 (20.83%), 20 (10.42 %) and 6 (3.13%) respectively (Table 3). Of the total FAS payment each year, the FAS payment for obstetric cases shared 69.8% for 2012, 40.8% for 2013, 45.39% for 2014 and in total 48.5% for the total 3 years of study (Table 2).



**Fig. 1.** Each province (Khon Kaen, Kalasin, Roi Et, and Maha Sarakham) in R7NHSO's annual percentage of FAS claim. The percentage was achieved by 100 multiplied by the ratio between the number of FAS claim cases and the number of in-patients in each year. The figure depicted the annual percentage for the year 2012-2014.



**Table 1.** Each province (Khon Kaen, Kalasin, Roi Et and Maha Sarakham) in R7NHSO's annual FAS payment cases and their relevant annual total money payment. The table depicted details during the year 2012-2014.

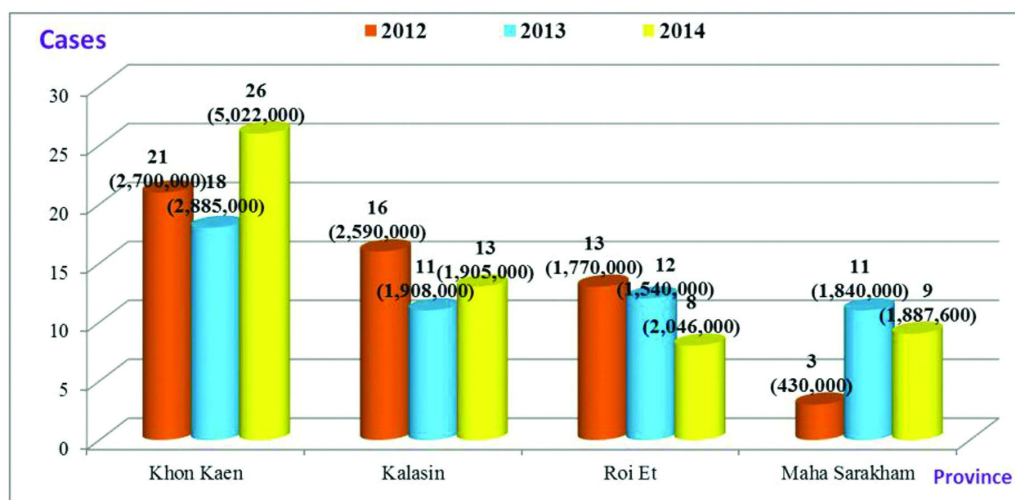
Province	2012		2013		2014		Total	
	Number of FAS payment Cases (%)	Total payment money in Baht (%)	Number of FAS payment Cases (%)	Total payment money in Baht (%)	Number of FAS payment Cases (%)	Total payment money in Baht (%)	Number of FAS payment Cases (%)	Total payment money in Baht (%)
Khon Kaen	32 (40.51)	3,970,000.00 (37.00)	45 (42.45)	9,889,000.00 (49.39)	46 (41.82)	9,135,000.00 (38.18)	123 (41.69)	22,994,000.00 (42.05)
Kalasin	24 (30.38)	3,830,000.00 (35.69)	22 (20.75)	3,728,000.00 (18.62)	25 (22.73)	5,335,000.00 (22.30)	71 (24.07)	12,893,000.00 (23.58)
Roi ET	20 (25.32)	2,500,000.00 (23.30)	22 (20.75)	3,506,000.00 (17.51)	24 (21.82)	6,296,000.00 (26.31)	66 (22.37)	12,302,000.00 (22.50)
Maha Sarakham	3 (3.80)	430,000.00 (4.01)	17 (16.04)	2,900,000.00 (14.48)	15 (13.64)	3,162,600.00 (13.22)	35 (11.86)	6,492,600.00 (11.87)
<b>Total</b>	<b>79 (100.00)</b>	<b>10,730,000.00 (100.00)</b>	<b>106 (100%)</b>	<b>20,023,000.00 (100.00)</b>	<b>110 (100.00)</b>	<b>23,928,600.00 (100.00)</b>	<b>295 (100.00)</b>	<b>54,681,600.00 (100.00)</b>
<b>Average 185,361.36 Baht/case</b>								

**Table 2.** Each province (Khon Kaen, Kalasin, Roi Et and Maha Sarakham) in R7NHSO's annual number of FAS payment cases by servicing department. The table depicted details during the year 2012-2014.

The servicing Department	2012		2013		2014		Total	
	Number of FAS payment cases (%)	Payment money in Baht (%)	Number of FAS payment cases (%)	Payment money in Baht (%)	Number of FAS payment cases (%)	Payment money in Baht (%)	Total Number of FAS payment cases (%)	Total payment money in Baht (%)
1. Obstetrics: severe perinatal conditions	46 (58.23)	7,240,000.00 (67.47)	36 (33.96)	7,458,000.00 (37.25)	39 (35.45)	9,915,600.00 (41.44)	121 (41.02)	24,613,600.00 (45.01)
2. Obstetrics: Tubal ligation failure	7 (8.86)	250,000.00 (2.33)	16 (15.09)	715,000.00 (3.57)	17 (15.45)	945,000.00 (3.95)	40 (13.36)	1,910,000.00 (3.49)
3. Surgery	8 (10.13)	1,375,000.00 (12.81)	13 (12.26)	2,950,000.00 (14.73)	20 (18.18)	4,975,000.00 (20.79)	41 (13.90)	9,300,000.00 (17.01)
4. Medicine	7 (8.86)	890,000.00 (8.29)	13 (12.26)	3,470,000.00 (17.33)	11 (10.00)	3,466,000.00 (14.48)	31 (10.51)	7,826,000.00 (14.31)

**Table 2.** Each province (Khon Kaen, Kalasin, Roi Et and Maha Sarakham) in R7NHSO's annual number of FAS payment cases by servicing department. The table depicted details during the year 2012-2014. (Cont.)

The servicing Department	2012		2013		2014		Total	
	Number of FAS payment cases (%)	Payment money in Baht (%)	Number of FAS payment cases (%)	Payment money in Baht (%)	Number of FAS payment cases (%)	Payment money in Baht (%)	Total Number of FAS payment cases (%)	Total payment money in Baht (%)
5. Pediatrics	3 (3.80)	380,000.00 (3.54)	8 (7.55)	1,960,000.00 (9.79)	11 (10.00)	2,191,000.00 (9.16)	22 (7.46)	4,531,000.00 (8.29)
6. Orthopedics	1 (1.27)	30,000.00 (0.28)	6 (5.66)	1,220,000.00 (6.09)	4 (3.64)	1,016,000.00 (4.25)	11 (3.73)	2,266,000.00 (4.14)
7. Dentistry	1 (1.27)	120,000.00 (1.12)	2 (1.89)	350,000.00 (1.75)	2 (1.82)	110,000.00 (0.46)	5 (1.69)	580,000.00 (1.06)
8. Gynecology	0 (0.00)	0.00 (0.00)	5 (4.72)	990,000.00 (4.94)	0 (0.00)	0.00 (0.00)	5 (1.69)	990,000.00 (1.81)
9. Ophthalmology	2 (2.53)	220,000.00 (2.05)	1 (0.94)	50,000.00 (0.25)	0 (0.00)	0.00 (0.00)	3 (1.02)	270,000.00 (0.49)
10. Other: Ear nose throat and laryngology, Psychiatry etc	4 (5.06)	225,000.00 (2.10)	6 (5.66)	860,000.00 (4.30)	6 (5.45)	1,310,000.00 (5.47)	16 (5.42)	2,395,000.00 (4.38)
Sum for the 3 years	79 (100.00)	10,730,000.00 (100.00)	106 (100.00)	20,023,000.00 (100.00)	110 (100.00)	23,928,600.00 (100.00)	295 (100.00)	54,681,600.00 (100.00)



**Fig. 2.** Each province (Khon Kaen, Kalasin, Roi Et and Maha Sarakham) in R7NHSO's annual number of FAS obstetric cases (failure of tubal ligation included) and their relevant total FAS payment (the amount of money were shown in parentheses). The figure depicted details during 2012-2014.



**Table 3.** Annual number of obstetric FAS payment cases by obstetric diagnosis during 2012-2014 in R7NHSO.

Type of obstetric diagnosis	2012 N(%)	2013 N(%)	2014 N(%)	Sum for the 3 years N(%)
1. Perinatal condition				
1.1 Neonatal diagnosis				
- Neonatal death	25(34.72)	16(26.67)	18(30.00)	59(30.73)
- Shoulder dystocia	15(20.83)	12(20.00)	14(23.33)	41(21.35)
- Meconium aspiration	5(6.94)	0(0.00)	0(0.00)	5(2.60)
- Cerebral palsy	2(2.78)	4(6.67)	0(0.00)	6(3.13)
- Severe birth asphyxia	4(5.56)	0(0.00)	0(0.00)	4(2.08)
- Birth injury	0(0.00)	1(1.67)	4(6.67)	5(2.60)
- Dead fetus in utero	0(0.00)	2(3.33)	0(0.00)	2(1.04)
1.2 Maternal diagnosis				
- Maternal death	11(15.28)	4(6.67)	5(8.33)	20(10.42)
2. Failure of tubal ligation resulting in unintended pregnancy.	7(9.72)	18(30.00)	15(25.00)	40(20.83)
3. Miscellaneous	3(4.17)	3(5.00)	4(6.67)	10(5.21)
- Sum of 3 years	72(100.00)	60(100.00)	60(100.00)	192(100.00)

\*\*\* Note: few cases had more than one diagnosis.

## Discussion

The annual rate of FAS claim and payment cases in every province in R7NHSO had the trend of rising during 2012-2014. The annual FAS claim cases rate climbed up from 0.020% of in-patients in 2012 to 0.069% in 2013 and to 0.103% in 2014. This was compatible to the global estimate that 94,000 people died in 1990 from adverse effects of medical treatment and increased to 142,000 in 2013<sup>(4)</sup>. Khon Kaen led the number of the FAS claim cases from which can be summarized as: the more number of in-patients cases the more number of FAS payment. The monetary payment for the duration of observation was 54.7 million Baht, averaging the payment to be 185.4 thousand Baht per a case of FAS payment. For the 3 year of study, the obstetric case shared 54.6 percents of the total cases and 48.5 percent of the total budget. The monetary payment for obstetric FAS cases rose from 7,490,000 Baht in 2012 to 9,163,000 Baht in 2013 and to 10,860,600 Baht in 2014, making 22.34% increase for 2013 from 2012 and 45% increase for 2014 from 2012. Khon Kaen which had the largest

number of in-patient services ranked the highest of both the annual and total of obstetric FAS money payment. Several studies have shown that complications during pregnancy are common and estimated between 15 and 25 for every 100 deliveries in USA<sup>(5,6)</sup>. However, most maternal deaths and serious complications occur during intrapartum period<sup>(7)</sup>. Obstetrics and gynecology accounted for the most medical lawsuit payments<sup>(8)</sup>. Among the FAS obstetric monetary payment, the neonatal death was the most common causes (30.73%), followed by shoulder dystocia (21.35%) and maternal death (10.42%). Such high number of neonatal deaths was compatible with the national neonatal death rate around 7 per 1000 livebirths<sup>(9,10)</sup>. Shoulder dystocia was the second most frequent of FAS payment. Interestingly shoulder dystocia occurred around 2% of vaginal delivery<sup>(11)</sup>. Maternal death was the third leading cause of obstetric FAS payment in the present study. According to the World Health Organization record, the estimated maternal mortality rate was 20 per 100,000 livebirths<sup>(12)</sup>. The fourth leading cause of obstetric FAS payment was

failure in tubal ligation and resulted in unintended pregnancy. Data from the international society revealed that a tubal ligation when performed properly and with all due precautions, gives 99.7 % protection against pregnancy, with low failure rates<sup>(13)</sup>. Werawatakul Y, et al<sup>(14)</sup> had reviewed the female sterilization at Srinagarind Hospital and found 74 cases of pregnancy post tubal resection from 35,094 cases (0.21%) .

Many strategies can be implemented to address these medical system errors. Primary prevention is possible for these complications. Well and regular monitoring antenatal care, regular in-service training for continuous improvement in obstetric performance particularly for the labor circumstance, well and appropriate distribution of the number of obstetricians according to the local demand in each hospital and well practice of medical risk monitoring. Early detection of complications of labor and delivery, and interventions including referral to higher levels of care are seen to reduce maternal and perinatal morbidity and mortality (e.g., up to one-third of neonatal deaths) in some developing countries<sup>(15)</sup>. For tubal ligation, histological confirmation of the right tube resection should be done and informing the inevitable failure should be consented in order that failure of tubal ligation should not be included in FAS claim<sup>(16)</sup>. The solution to pay settled by the S41sCNHSO helped eliminate time consuming court trial, eliminate litigation expense and can maintain the relationship and attitude between the healthcare provider and the plaintiff. The patient and his or her family usually were satisfied with the NHSO's final decision even having coming out with the refusal of payment in few cases. With dissatisfaction, the patient and his or her family can make an appeal to the NHSO or file a lawsuit in a court. However, this event still did not appear in R7NHSO. A quick, honest "apology" might prevent a future claim, or provide an opportunity for a settlement without the need for litigation. However, in general NHSO should improve the standards of medical system and medical practice and also regulations for medical malpractice. Incidence of negligence in hospitals produced a greater proportion of severe outcomes.

The working group had brain storm in the meeting and introducing 5 items of quality improvement in the

health service of NHSO region 7 for the purpose of reducing the obstetric loss.

1. Promote personnel skilled and labor room facilities. Support for clinical skills, new knowledge for medical personnel via training working, conference, academic meeting, clinical symposium, site visit and available of specialist and team to do emergency operation in each health service hospital.

2. Effective consultation system for emergency cases both in and ex hospital.

3. Referral emergency cases must base on geographic consideration to the higher facility hospital especially in the life threatening condition (not base on the formal referral tract) that support from the emergency fund of the NHSO.

4. Good service behavior: There are so many levels of medical personnel to involve in the referral complicated cases. Comment, suggestion, complaint of the serious problems in front of the patients and their relative must be careful that could make misunderstand and angry with the primary hospital.

5. Provincial administrating committee of the health claims follow the section 41 must have regular meeting to complete the sentences within 30 days follow the purpose of the National Health Service Act. The delay of the process may be from preparing data process, postpone of the meeting and incomplete data. This step must more rapidly and precising.

This study had some limitations. First of all, the study was confined to only the R7NHSO. The study did not go into detail of FAS cases of every service department. The diagnoses that led to FAS payment were made by a retrospective judgment from the medical record. No site interrogation was made. Study of this kind should be made in the national level in order to improve the standard of the national medical or health care.

## Conclusion

The FAS cases and FAS payment in R7NHSO were rising. Most of the FAS cases and payments were from the department of obstetrics. Many diagnoses that caused FAS cases and payments were preventable. A good policy of distribution of the number of obstetricians,

a continuously in-service training for obstetricians a better compensation for the obstetric physician, better consultation and transferring system together with well monitoring of the hospital risk, all these measure should be revised.

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## Potential conflicts of interest

The authors declare no conflict of interest.

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