The outcome of emergency patient transported by public air ambulance service in Thailand

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Background

FACTS IN EMERGENCY ROOM

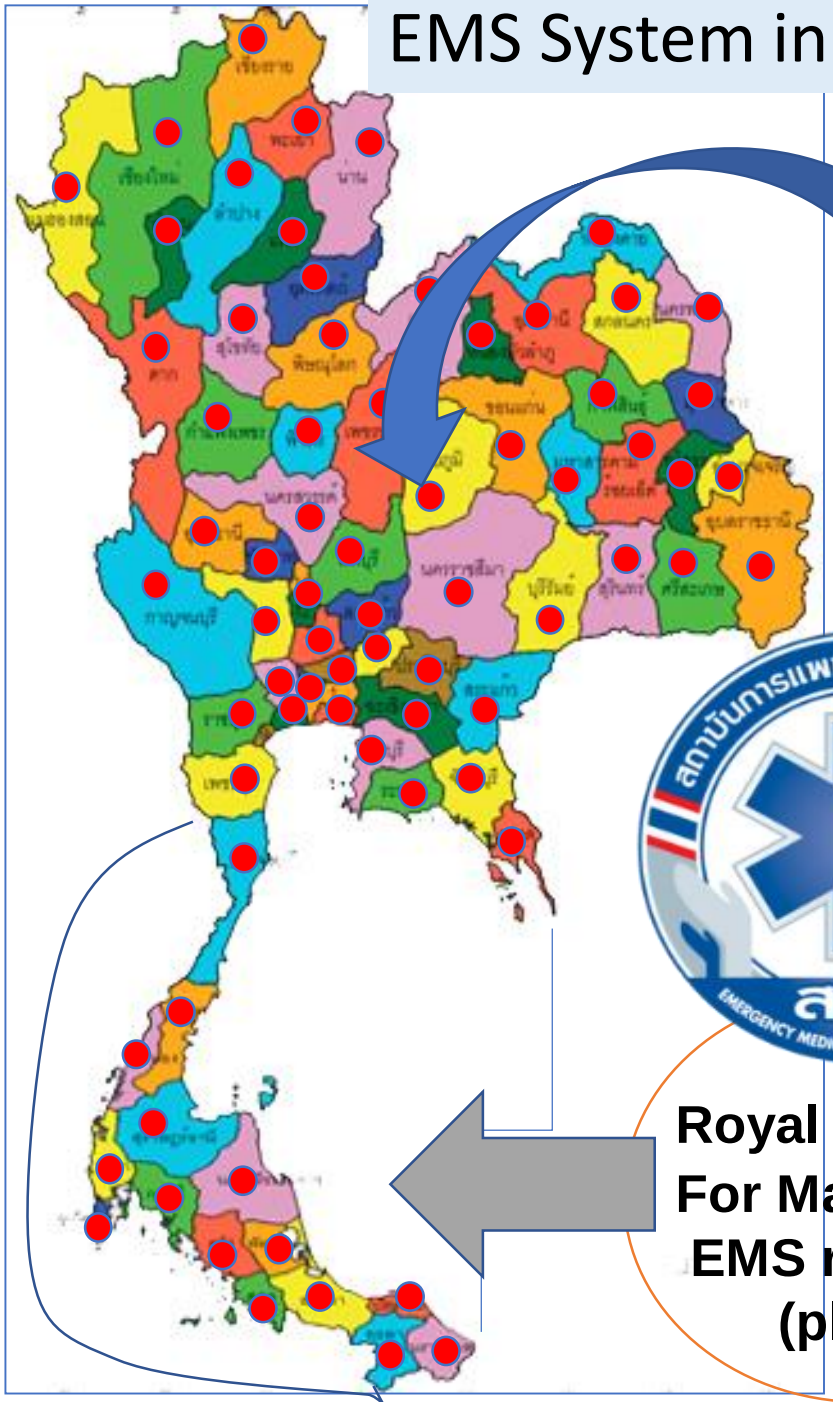
- **200 MILLION OF HOSPITAL OUT PATIENTS VISIT IN THAILAND ANNUALLLY**
  - **ER ~ 35 MILLION VISITS**
  - **EMERGENCY 28%**
  - **URGENCY 3%**

} **≈ 10 MILLION VISITS = Total estimated demand for EMS**

- IN 2016 NIEM PROVIDED PREHOSPITAL CARE TO
  - ~ 1,500,000 PATIENTS (1 M of Emergency and urgency)
  - ~ ONLY 10 % OF TOTAL REQUIREMENT

The rest (80- 90 %) of today still rely on friends/relatives/ non-certified personals/bystanders

EMS System in Thailand



Emergency Call 1669

80 Call centers/ 77 provinces
13 regions MOPH+BMA
operation 24/7

- **Land**

- **Air**

- **Sea**

สถาบันการแพทย์ฉุกเฉินแห่งชาติ
สพฉ.
EMERGENCY MEDICAL INSTITUTE OF THAILAND

Royal Thai Navy For Maritime EMS region (plan)

Aeromedical Transport Service in Thailand

- Military aeromedical service
  RTAF, RTN,RTA,RTP
- Civil aeromedical service
  - Private aeromedical service
    - Hospital-based
    - Non-hospital-based
  - Public aeromedical service
    - Thai Sky Doctor Service

THAI SKY DOCTOR SERVICE

- Founded in 2009 by the National Institute for Emergency Medicine.
- A public emergency aeromedical transportation service of Thailand.
- Offers Helicopter Emergency Medical Service (HEMS) and fixed wing operations for emergency patients.
- **Purpose:** Increase chances of survival for emergency patients in remote or inaccessible locations.

THAI SKY DOCTOR SERVICE: Integration between Aircraft Providers, Medical Teams and System Administrator

“There is very few study about Public air ambulance service in Thailand”

The first study is Model and policy recommendation for Thailand’s Aeromedical service (Jitisak T.)

After the Thai Sky Doctor Service implemented there is no study about provision of this service.

This study intent to study characteristic and outcome of public air ambulance service (Thai Sky Doctor Service) in Thailand.

General Objectives

- To describe outcome of emergency patient transported by Public air ambulance service (Thai sky doctor) in Thailand.

Specific Objectives

1. To describe general characteristics of Public air ambulance service (Thai sky doctor).

2. To describe immediate 1 day and delayed 3 days post air transport outcome of emergency patients transported by Public air ambulance service (Thai sky doctor) in Thailand.

3) To identify the factors associated with 1 day and 3 day outcome.

Research Questions

1) What is the characteristic of Public air ambulance service in Thailand (Thai sky doctor) ?

2) What are the 1 day and 3 days outcome of emergency patients that transported by Public air ambulance service (Thai sky doctor) in Thailand ?

3) What are the factors associated with 1 day and 3 days outcome?

Conceptual Framework

Independent Variables

Dependent Variable

Demographic data of patients

- Gender, age, health security scheme, nationality

Demographic data of Thai Public air ambulance service

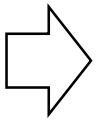
- National EMS Dispatch Center
- Regional 1669 EMS dispatch center
- Flight medical director
- Referral / Receiving Medical facility
- Aircraft Type / Aircraft provider
- Airport / helipad
- Payer
- Type of mission

Associated factors of Thai Public air ambulance service

- Gender, Age
- Patient conditions
  - Disease group
  - Triage criteria and Level of Patient acuity
- Medical team
- Flight information
  - Flight response time
  - Flight time

Mission obstacle factors

- Weather condition
- No aircraft
- Dead before mission



1 day and 3 days post air transport outcome of emergency patients who transported by Public air ambulance service In Thailand

Method

- Cross sectional Descriptive study using Mixed method
- Qualitative Data and Quantitative data

Study Population

Public air ambulance service (Thai sky doctor service) mission in Thailand

Sampling Technique

- Qualitative data use primary data from aeromedical decision maker (Flight director) , aircraft provider, medical team, receiving hospital , payer and NIEM
- Quantitative data use secondary data of all patient record from NIEM

Data collection

- In-depth and Focused group interview
- Topic of interview:
  - What is their roles in Public air ambulance service?
  - What are facilitating factors or obstacle factors for Public air ambulance service?
- Secondary data were collected from NIEM by researcher with permission.

Data analysis

- Descriptive statistics: Percentages, mean, median and standard deviation.
- Inferential statistics: Chi square test, If more than 20% of the cells have expected frequencies less than 5 this study will use Fisher's exact test.

Eligible Criteria

Primary Data:

Inclusion criteria

- Medical staff who had work for EMS more than 5 years
- Medical staff who had work for Thai sky doctor service more than 1 year

Exclusion criteria

- Medical staff who not informed consent

Secondary Data:

Inclusion criteria:

- Patient Recorded during year 2010-2015

Exclusion criteria:

- Patient record that not permitted to reveal data
- Not complete Patient record
- Mission during disaster because of lack of complete data

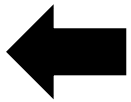
Results (1)

- 205 missions of public air ambulance service were requested.
  - 184 cases were transported, while 33 cases were not.

Data	n(%)
Mission	
Request with transport	172(83.9)
Request with no transport	33(16.1)
Patients	
Transport	184(84.8)
No transport	33(15.2)
Transport mission	
Single patient	163(94.8)
Multiple patients	9(5.2)

33 Cases

Not being transported



Lack of aircraft
Weather condition
Patients' death before transported

Results (2) Demographic data of patients transport and not transport mission

Variable		Transport mission n(%)	Not transport mission n(%)
Gender			
	Male	124(67.4)	18(54.5)
	Female	60(32.6)	15(45.5)
Age group			
	≤1 month	9(4.9)	3(9.1)
	2 mo.-1year	4(2.2)	1(3.0)
	2-14 years	7(3.8)	2(6.1)
	15-59 years	107(58.2)	16(48.5)
	≥60 years	50(27.2)	8(24.2)
	Unknown	7 (3.8)	3(9.1)
Nationality			
	Thai	167(89.3)	32(97.0)
	None Thai	17(9.1)	1(3.0)
Health insurance			
	Gov	35(19.0)	4(12.1)
	SSS	6(3.3)	0(0.0)
	UC	98(53.3)	7(21.2)
	Other	23(12.5)	20(60.0)
	None	22(12.0)	2(6.1)

Results (3) Demographic data of Patient condition in transport and not transport mission

Variable	Transport mission n(%)	Not transport mission n(%)
Disease group		
Neonate-Ped	2(1.1)	0(0.0)
Newborn	9(4.9)	2(6.1)
OB	8(4.3)	0(0.0)
STEMI	37(20.1)	6(18.2)
Stroke	21(11.4)	7(21.2)
Trauma	63(34.2)	6(18.2)
Other	44(23.9)	12(36.4)
Triage or Acuity		
Level 1	55(29.9)	5(15.2)
Level 2	106(57.6)	25(75.8)
Level 3	23(12.5)	3(9.1)

Results (4)

1 day and 3 days outcome of emergency patients transported

	Admit n(%)	Dead n(%)	D/C n(%)	Total n(%)
1 day outcome	182(98.9)	2(1.1)	0(0)	184(100.0)
3 day outcome	157(85.3)	10(5.4)	17(9.2)	184(100.0)

- Gender, age, disease group, patient severity, medical team, response time and transport time were not associated with one-day outcome after air transportation.
- Gender, age, disease group, medical team, response time and transport time were not associated with three-day outcome.
- Patient severity made a significant difference associated with the three-day outcome at the .05 statistical level ($p = .033$).

Results (5)

Facilitating factors and obstacles

Group	Facilitating factors	Obstacles
National dispatch center, NIEM Regional Dispatch Center Medical Teams	• Strong policy support • Quick communication • Financial support • National medical director • Clear guideline for public air ambulance service • Regional 1669 dispatch center know to use service	• Lack of National medical director • Regional 1669 dispatch center not know this service clearly • Benefit for medical team were not clear • Inflight safety concern • Aircraft agencies could not support or delay support • Lack of long term financial support

Conclusion

- There were identified characteristic of Thai sky doctor and factors associated with 1 and 3 day outcome post air transportation.
- Age, gender, disease group, medical team, response time and transport time were not associated with 1 and 3 days outcome.
- Patient severity was statistically significant difference associated with 3 days outcome.
- Further study may be necessary to improve patient outcome, and develop public air ambulance service.

THANK YOU FOR YOUR ATTENTION