PAN-ASIAN STUDY ON EMS PERFORMANCE INDICATORS

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OUTLINE OF PROPOSAL

- Introduction
- Methods
- Significance

INTRODUCTION: TEMPORAL COMPONENT

The components of EMS episode, based on timing, consist of the following:

- call processing time,
- control allocation time,
- crew mobilization time,
- traveling time to the scene,
- time spent at the scene,
- traveling time back to the ED or hospital, and
- time spent at ED or hospital

(Guppy & Wollard, 1999)

INTRODUCTION: PUBLIC PERCEPTION

- The use of satisfaction as a key performance indicator for ambulance services is well accepted throughout the world.

- The expectations of patients and families being met by the services provided.

- People seldom ask or express their opinion regarding this specific aspect of health care services delivering systems received.

- This phenomenon is most probably due to the fact that:
  - I. Communities themselves have no idea of the level of care provided to them.
  - ii. No specific parameter or benchmark to compare the services received by them.

AIMS

General

To create a set of standardized and sustainable performance indicators for Emergency Medical Services (EMS) across Asian countries

AIMS

Specific

1. To measure the ambulance response time (ART) in each study center
2. To identify factors associated with ART
3. To measure the association of ART with mortality & morbidity for medical/surgical & trauma cases
4. To measure the client satisfaction with EMS provision
5. To assess the factors associated with client satisfaction
6. To measure the association of ART with client satisfaction

Null Hypothesis

The client satisfaction and ambulance response time are similar throughout Asian countries, regardless of EMS system and client features

METHODOLOGY

The proposed study is an explorative study using a quantitative design

Two sets of questionnaires:

1. **Set A** (Ambulance Response Time Questionnaire); and

2. **Set B** [Questionnaire to Assess Perception of Ambulance Services by Patient (or Accompanying Relative), Ambulance Crew and Other Health-Care Provider]

Domain	Item	Score*
Vehicle	1. General appearance of the ambulance	1 2 3 4 5 6 7 8 9 10
	2. Cleanliness of the ambulance	1 2 3 4 5 6 7 8 9 10
	3. Comfort of ride in the ambulance	1 2 3 4 5 6 7 8 9 10
	4. Feeling of security in the ambulance	1 2 3 4 5 6 7 8 9 10
	5. Adequacy of ambulance equipment	1 2 3 4 5 6 7 8 9 10
Staff attitude	6. Helpfulness of staff	1 2 3 4 5 6 7 8 9 10
	7. Attentiveness of staff	1 2 3 4 5 6 7 8 9 10
	8. Empathic nature of staff	1 2 3 4 5 6 7 8 9 10
	9. Friendliness of staff	1 2 3 4 5 6 7 8 9 10
	10. Gentleness of staff	1 2 3 4 5 6 7 8 9 10
Staff performance	11. Ensuring of patient's comfort	1 2 3 4 5 6 7 8 9 10
	12. Calmness of staff	1 2 3 4 5 6 7 8 9 10
	13. Adequacy of explanation by staff of their actions	1 2 3 4 5 6 7 8 9 10
	14. Efficiency of staff	1 2 3 4 5 6 7 8 9 10
	15. Feeling of safety when staff arrive	1 2 3 4 5 6 7 8 9 10
Professionalism	16. Perceived level of training of staff	1 2 3 4 5 6 7 8 9 10
	17. Professional look of staff	1 2 3 4 5 6 7 8 9 10
	18. Level of trust in staff	1 2 3 4 5 6 7 8 9 10
	19. Level of competency of staff	1 2 3 4 5 6 7 8 9 10
	20. Confidence of staff to keep me alive until reaching the hospital	1 2 3 4 5 6 7 8 9 10
Efficiency of service	21. Availability of staff at all times	1 2 3 4 5 6 7 8 9 10
	22. Response time of ambulance to an emergency	1 2 3 4 5 6 7 8 9 10
	23. Speed of admittance to hospital	1 2 3 4 5 6 7 8 9 10
Image	24. What do you think is the public perception of our ambulance service?	1 2 3 4 5 6 7 8 9 10

Country _____**Site Number** □□□□□□□□

City/EMS District _____**Trial number** □□□□□□□□
(For official use only)

Patient brought in by Government ambulance$_1$ □
Private ambulance$_2$ □

Date of response *(dd/mm/yyyy)*: □□ / □□ / □□□□

Location type: *(please tick only one box)*

- □ $_1$Home residence
- □ $_2$Public/Commercial building
- □ $_3$Healthcare facility
- □ $_4$Residential institution
- □ $_5$Industrial place
- □ $_6$Place of recreation
- □ $_7$Street/Highway
- □ $_8$Other, specify _____

A) Time call received (phone picked up) *(24-hour format)*: $_1$□□□□

B) Time ambulance left the call center/awaiting area: $_2$□□□□

C) Time arrived at the scene: $_3$□□□□

D) Time arrived at the patient side: $_4$□□□□

E) Time left the scene: $_5$□□□□

F) Time arrived at health center: $_6$□□□□

"A till D" = Ambulance response time (in minutes): $_7$□□□□

"A till F" = EMS episode time (in minutes): $_8$□□□□

Sample calculation:

1) Based on the study:

Ambulance Response Time And Emergency Medical Dispatcher Program: A Pilot Study In Malaysia

Southeast Asian J Trop Med Public Health. Vol 39 No. 6 November 2008: 1150-53

Ambulance response time (ART): 15.2 ± 4.6 minutes (mean ± SD)

Single mean formula:

$$n=\left[\frac{1.96 \times 4.6}{0.25}\right]^2$$

= 1298

1.96 (5% error), 4.6 (S.D from previous study), 0.25 (Precision of study)

Considering 20% drop out: **1947 cases of ambulance call required to estimate the mean ambulance response time with the precision of 0.25 minutes per call including consideration of 20% drop out from the study**

Inclusion criteria

1. All ambulance call events

Exclusion criteria

1. Unable to answer the questionnaire
2. No accompanying relatives/friends
3. Missing time data

Independent variables

Personnel training level, Age, Sex, Region, Presence of structured EMS training, AVL/GPS use, Availability of EMD/Call Center, Clients' age, sex, educational/social background

Dependent factors

Client Satisfaction Score, ART/EMS episode, mortality at 30-days, morbidity

Statistical analysis

Uni-variate analyses such as Independent t-test & One-way ANOVA for each independent variable. Multi-variate analysis such as Multiple Linear/Logistic Regression & ANOVA/ANCOVA test using the Statistical Package for Social Sciences (SPSS).

SIGNIFICANCE

- EMS performance monitoring
- Basis for service improvement
- Patient outcome