A STUDY ON INAPPROPRIATE ATTENDANCE TO EMERGENCY DEPARTMENT HOSPITAL UNIVERSITI SAINS MALAYSIA

DR NORA BINTI WAHAB

DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF MEDICINE (EMERGENCY MEDICINE)

SCHOOL OF MEDICAL SCIENCES

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AKU JANJI

Diperakui bahawa disertasi yang bertajuk **A STUDY ON INAPPROPRIATE ATTENDANCE TO EMERGENCY DEPARTMENT HOSPITAL UNIVERSITI SAINS MALAYSIA** merupakan kerja dan penyelidikan yang asli dari **NORA BINTI WAHAB** ,No Kad Pengenalan **820206-03-5078**,No Matrik **PUM0145/14,**dari tempoh 2014 hingga 2018 adalah di bawah penyeliaan kami. Disertasi ini merupakan sebahagian daripada syarat untuk penganugerahan **Sarjana Perubatan Kecemasan**. Segala hasil penyelidikan dan data yang diperolehi adalah hak milik terpelihara Universiti Sains Malaysia.

_____   _____

Tandatangan Pelajar   Tandatangan Penyelia Utama ,

                                                 Pensyarah Jabatan Kecemasan,

                                                 Pusat Pengajian Sains Perubatan,

                                                 Universiti Sains Malaysia.

_____

Tandatangan Ketua Jabatan,

Jabatan Kecemasan,

Universiti Sains Malaysia.

ACKNOWLEDGEMENT

In the name of Allah, the Most Gracious and the Most Merciful

All praises to Allah for the strength and His blessing in completing this dissertation.

First and foremost, my sincere gratitude goes to my supervisor Prof Nik Hisammuddin Nik Abdul Rahman, Head of Department of Emergency and Trauma Department, Hospital Universiti Sains Malaysia (HUSM) for his supervision and constant support throughout this research starting from proposal until submission of the dissertation. Thank you for all the experience, the knowledge, and the unfailing encouragement that you have ever so ready to provide and share.

My sincere thanks to all the lecturers and colleagues in Emergency Department, HUSM for their enthusiasm, kindness and moral support throughout my master programme. Not forgetting to the staffs of the Emergency Department of HUSM for their help and assistance in completing this study; my truly appreciation and thanks to them.

Last but not least, I would like to thank my loving and supportive family. Thank you for your support, love and guidance. With your constant encouragement and love, I had able to complete this dissertation on time. You'll always have my unconditional love, today and forever. To all who had put in their efforts in making this study a success. Only Allah could repay all your kindness.

TABLE OF CONTENTS

CHAPTER 3: MANUSCRIPT

CHAPTER 4: APPENDICES

ABSTRAK

Pengenalan:

Kajian ini bertujuan untuk menentukan perkadaran kehadiran pesakit yang tidak bersesuaian di Jabatan Kecemasan Hospital Universiti Sains Malaysia (USM) dari November 2016 sehingga January 2017, taburan demografi pesakit , taburan kehadiran dalam masa 24 jam,taburan kehadiran mengikut hari dan ,peratus jenis diagnosis penyakit. Kajian ini juga bertujuan untuk mencari faktor-faktor yang berkaitan dengan ketidaksesuaian kehadiran mendapatkan rawatan di Jabatan Kecemasan Hospital Universiti Sains Malaysia.

Metodologi:

Kajian ini adalah kajian keratan rentas yang dijalankan di Jabatan Kecemasan Hospital Universiti Sains Malaysia,Kubang Kerian, Kelantan.Dengan menggunakan persampelan rawak sistematik sebanyak 346 kes dipilih.Ketidaksesuian kehadiran untuk mendapatkan rawatan di Jabatan Kecemasan dinilai menggunakan carta alir keputusan yang telah di sahkan.Hubungkait berkaitan sosio demografi dan ketidaksesuian kehadiran mendapatkan rawatan di jabatan kecemasan dianalisa.

Keputusan

Jumlah keseluruhan sampel untuk kajian ini ialah 346 kes.Golongan lelaki dan perempuan adalah sama rata.Bangsa Melayu adalah 95% dan selebihnya (5%) adalah bukan Melayu. Sebanyak 22.8% (95%CI 0.18 to 0.27) dari jumlah keseluruhan dinilai sebagai ketidaksesuian kehadiran mendapatkan rawatan di Jabatan Kecemasan dan selebihnya adalah dikira sebagai kehadiran yang wajar untuk mendapatkan rawatan di Jabatan Kecemasan .Kehadiran ke Jabatan Kecemasan untuk 24 Jam adalah paling tinggi pada jam 2200-2359(95 kes) dan ketidaksesuian kehadiran mendapatkan rawatan di Jabatan Kecemasan juga adalah paling tinggi pada jam 2200-2359 (25 kes). Ketidaksesuaian kehadiran mendapatkan rawatan adalah paling tinggi pada hari Jumaat (25.3%).Jenis masalah kesihatan yang menyumbang kepada ketidaksesuian kehadiran mendapatkan rawatan di Jabatan Kecemasan HUSM adalah jangkitan laluan atas pernafasan (40%),cirit birit ringan (3.5%),sakit otot dan tulang (1.6%),kecederaan tisu lembut (2%) jangkitan trek urinari(0.6%),skabies (0.6%),eczema (0.3%),varicella zoster (0,3%),konjunktivitis (0.3%),sambungan ubatan (0.3%), nanah kecil (0.3%), and sembelit (0.3%) Faktor- faktor berkaitan dengan ketidaksesuian kehadiran mendapatkan rawatan di Jabatan Kecemasan adalah golongan yang berumur lebih 45 tahun. ($p < 0.05$), bangsa($p = 0.949$) ,jantina($p = 0.749$) and jenis masalah kesihatan($p = 0.997$).

Kesimpulan

Ketidaksesuaian kehadiran untuk mendapatkan rawatan di Jabatan Kecemasan HUSM masih lagi ketara. Walaupun kumpulan penyumbang kepada jumlah ini telah dikenalpasti namun faktor lain masih lagi perlu dikenalpasti dan di nilai untuk membolehkan penambahbaikan boleh dilakukan dalam meningkatkan mutu kesihatan.

ABSTRACT

Introduction

This study aimed to determine the prevalence of inappropriate attendance to Emergency Department in Hospital Universiti Sains Malaysia (USM) within November 2016 to January 2017, demographic data, percentage of attendance for 24 hours and days in a week, percentage of common diagnosis for inappropriate visit. This study also aimed to identify the associated factors of inappropriate attendance to Emergency Department Hospital Universiti Sains Malaysia

Methodology

This cross sectional study was performed in the emergency department of Hospital Universiti Sains Malaysia, Kubang Kerian, and Kelantan. By using systematic random sampling, a sample of 346 cases was selected. The appropriateness of the attendance then further evaluated base on validated decision flow chart. The association between socio-demographic and inappropriate visit to Emergency department was analysed.

Result

The total sample reviewed for this study was 346 cases. Men and women were equally represented.95% was Malay and the rest is non-Malay (5%).

Of the total number of visit to the A&E, 22.8% (95%CI 0.18 to 0.27) were evaluated as inappropriate and remaining as appropriate. The 24 hours utilization pattern showed the highest peak of utilization of A&E was at 2200-2359 hour (95 cases) and the highest peak for inappropriate use also was at 2200-2359 hour (25 cases).The highest rate for inappropriate attendance to Emergency Department was on Friday (25.3%) .

Type of illness contributed for inappropriate visit were Upper Respiratory Tract Infection (40%) ,mild acute gastroenteritis (3.5%),musculoskeletal pain (1.6%),soft tissue injury (2%) urinary tract infection (0.6%),scabies (0.6%),eczema (0.3%),varicella zoster (0,3%),conjunctivitis (0.3%),request medication (0.3%), simple abscess (0.3%), and constipation colic(0.3%).

Factors associated with inappropriate visits were group of >45 years old (p <0.05), race (p=0.949), gender (p=0.749) and type of illness (p=0.997).

Conclusion

Inappropriate attendance to emergency department HUSM is still significant .Although certain group of user was recognised as contributor for inappropriate attendance, others factors still have to recognise and evaluate   so that proper steps and policies can be taken for a better health services. .

CHAPTER 1: INTRODUCTION

1.1   Prevalence of Inappropriate Attendance to Emergency Department

Hospital Emergency Department (ED) serves a vital role in the health care system and as the interface between hospital services and the community. As Hospitals ED mostly provide 24-hour services, it becomes easily accessible to the public. The main objective of Emergency services is to perform procedure to immediately relieve well-circumscribed situations, and is not intended to include on-going care (Young and Sklar, 1995). However, patients frequently seek the emergency department (ED) to obtain immediate attention in order to get fast treatment even though in non-emergency cases. Although this may appear appropriate from the patient's perspective (given existing limitations in other levels of health care), this type of use places a burden on the health system and increases the demand on the ED for care that could be managed better at other levels and that in a sense competes with true emergency cases.

A systematic literature review study done at US showed the average fraction of all ED visits that were evaluated as non-urgent   (whether prospectively at triage or retrospectively following ED evaluation) was 37% (range: 8–62%) (Uscher-Pines *et al.*, 2013).Other studies done at Australia showed lower prevalence of inappropriate Emergency Department which was 13%(Finn *et al.*, 2006) and the other study at Brazil showed prevalence of inappropriate ED attendance was 24.9%(Carret *et al.*, 2007) . In Malaysia, 38.3% of ED attendees were non-urgent cases in Hospital University

Kebangsaan Malaysia (HUKM) in 1998 (Azhar, 2001), and 35% in Hospital Kuala Lumpur (HKL) in 2001(Azhari, 2002). In both settings, it was reported as an increasing trend. A local study found that 55% of inappropriate attendances in the ED of Hospital University Science Malaysia (HUSM), in 2000.(Selasawati *et al.*, 2004)

1.2 Burden of Increasing Prevalence of Inappropriate Attendance to Emergency Department

The increased patient load may cause emergency providers to a lot less time to care for each patient and to decrease time for health teaching, counselling, and helping patients with chronic health problems to find appropriate resources to help manage their disease states.(Northington *et al.*, 2005).A study done at Hospital university of Elche ,Spain on 2000 stated that a series of problems often are considered to be associated with overuse of A&EDs: (1) lack of continuity or follow-up of treatment of patients who replace primary care visits with visits to the ED, (2) diversion of necessary resources from life-threatening situations, (3) adverse effect of the work overload in the ED on hospital organization, and (4) the supposedly higher costs involved in ED care than in primary care. In some emergency department more than one third of all visits have been classified as non-urgent, contributing to overcrowding. In this study showed overcrowding lowers the quality and accessibility of emergency care, and increases the stress levels and turnover of ED staff.(Rowe *et al.*, 2006)

1.3 Justification of the study

Inappropriate utilization of ED services in HKB and HUSM during the year 2000 were more than 50%. This is a high level of inappropriate ED utilization. However from this study we still did not know who are these inappropriate users, the reasons and factors for the inappropriate utilization .So, in this study we want to recognize several predictive factors for the inappropriate visits such as age, sex, occupation, type of illness. Other than that we can make comparison between the result of previous study which was 16 years ago and current study .Abusing Emergency services will compromise management of patient who need true emergency attention. For this reason, we want to know regarding characteristic of population who choose to come to the emergency department instead of their primary care provider (PCP) with non-urgent medical complaints. Healthcare providers do not fully understand why patients choose the ED route of care. Data regarding demographic population and the predictive factors will be valued in understanding the problem, thus planning our future policies .It is hoped that this study will help in our approach in public awareness education.

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CHAPTER 2: STUDY PROTOCOL

2.1   Introduction

Hospital Emergency Department (ED) serves a vital role in the health care system and as the interface between hospital services and the community. As Hospitals ED mostly provide 24-hour services, it becomes easily accessible to the public. The main objective of Emergency services is to perform procedure to immediately relieve well-circumscribed situations, and is not intended to include on-going care (Young and Sklar, 1995). However, patients frequently seek the emergency department (ED) to obtain immediate attention in order to get fast treatment even though in non-emergency cases. Although this may appear appropriate from the patient's perspective (given existing limitations in other levels of health care), this type of use places a burden on the health system and increases the demand on the ED for care that could be managed better at other levels and that in a sense competes with true emergency cases.

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2.3 Literature Review

A systematic literature review study done at US showed the everage fraction of all ED visits that were evaluated as non urgent (whether prospectively at triage or retrospectively following ED evaluation) was 37% (range: 8–62%) (Uscher-Pines *et al.*, 2013).Other studies done at Australia showed lower prevalence of inappropriate Emergency Department which was 13%(Finn *et al.*, 2006) and the other study at Brazil showed prevalence of inappropriate ED attendance was 24.9%(Carret *et al.*, 2007) . In Malaysia, 38.3% of ED attendees were non-urgent cases in Hospital Universiti Kebangsaan Malaysia (HUKM) in 1998 (Azhar ,2001), and 35% in Hospital Kuala Lumpur (HKL) in 2001(Azhari, 2002). In both settings, it was reported as an increasing trend. A local study found that 55% of inappropriate attendances in the ED of Hospital Universiti Sains Malaysia (HUSM), in 2000.(Selasawati *et al.*, 2004)

The increased patient load may cause emergency providers to a lot less time to care for each patient and to decrease time for health teaching, counselling, and helping patients with chronic health problems to find appropriate resources to help manage their disease states.(Northington *et al.*, 2005).A study done at Hospital university of Elche ,Spain on 2000 stated that a series of problems often are considered to be associated with overuse of A&EDs: (1) lack of continuity or follow-up of treatment of patients who replace primary care visits with visits to the A&ED, (2) diversion of necessary resources from life-threatening situations, (3) adverse effect of the work overload in the A&ED on hospital organization, and (4) the supposedly higher costs involved in A&ED care than in primary care. In some emergency department more than one third of all visits have

been classified as non-urgent, contributing to overcrowding. In this study showed overcrowding lowers the quality and accessibility of emergency care, and increases the stress levels and turnover of ED staff.(Rowe *et al.*, 2006)

Most of these non-urgent patients, however, are unaware of other sources of adequate care for their current healthcare needs and thus seek out the ED. (Northington, Brice et al. 2005).Most of the patients stated that the emergency department was the best place for them to receive care, even though the emergency staff, and perhaps the patients themselves, did not believe that the medical problems required rapid care. (Burnett and Grover 1996).

A systematic review of literature (2013) analysed regarding four articles that focused only on non-urgent ED visits described patients' perceptions of the urgency of their conditions. In these cases, the vast majority of patients (>80%) felt that their condition was urgent/could not wait for treatment.

Carret et al (2007) found Inappropriate ER use was inversely associated with age, longer stay in the waiting room, longer duration of symptoms and morning shift. However, the determinants of inappropriate ER use differed according age groups . Within the younger age-group (15–49 years), inappropriate ER use was higher among females, patients who reported visiting the ER because there was no other place to go, patients reporting that the doctor at the regular place of care refused to attend to them

without a prior appointment, and individuals who reported that the PHC clinic which they use is open for shorter periods during the day. Among older patients (50+ years), those with highest level of education, absence of self-reported chronic diseases and lack of social support were more likely to engage in higher inappropriate ER use.

Sempere-Selva, Peiró et al (2001) in their study found inappropriate use was associated with younger patients, use of own means of transportation, referral by the hospital, certain months of the year, and certain diagnostic groups of lesser severity .This result should be considered as significant problems related to emergency care services. Therefore, one of the objectives of this study are to determine the predictive factors for inappropriate utilisation of ED services in HUSM

2.4 Objective, Research Questions, Research Hypothesis

GENERAL OBJECTIVE

To characterize the patient population of inappropriate attendance to the emergency department of tertiary university hospital based on validated decision flow chart

SPECIFIC OBJECTIVE

1) To determine the prevalence of inappropriate attendance to emergency department of tertiary university hospital

2) To determine the demographic pattern of inappropriate attendance to emergency department of tertiary university hospital.

3) To identify the predictive factors (group of age, type of illness, social status) of inappropriate attendance to emergency department of tertiary university hospital

Research questions

1) What is the prevalence of inappropriate attendance to emergency department of tertiary university hospital?

2) What is the demographic pattern of inappropriate attendance to emergency department of tertiary university hospital?

3) What are the predictive factors of inappropriate attendance to emergency department of tertiary university hospital?

HYPOTHESIS

Age, sex, gender, and type of illness are associated with inappropriate attendance to emergency department.

2.5   Methodology

•Study design- Using a cross-sectional study design

•Study duration- Study is going to perform from 1ST of November 2016 to 31ST

January 2017

•Study location- Emergency department of Hospital University Sains Malaysia

•Referance population- Patient attending to emergency department in Kelantan

•**Study population**-Patient attending to emergency department,HUSM

•**Study participants**- Patient presented to emergency department,HUSM and who fulfill the inclusion and exclusion criteria

Inclusion and exclusion criteria

> **Inclusion criteria:**

-All Patient presented to emergency department,HUSM from 1ST November 2016 – 31[st]January 2017

> **Exclusion criteria:**

-Referral cases and ambulance's call cases

-Patient was scheduled to be seen at a&e.

SAMPLE SIZE

Sample size is calculated using the single proportion formula. Inappropriate utilization of ED services in HKB and HUSM during the year 2000 were more than 50 %.(Selasawati et al.2004) .

Sample size,n $= \dfrac{Z^2 P(1-P)}{d^2}$

Z = Z statistic for level of confidence

P = expected prevalence

d = precision.

Taking the Z score as 1.96, expected prevalence of inappropriate attendance to emergency department at 50%, based on available literature and precision of 0.05, the sample size is calculated to be 384 cases

METHOD OF DATA COLLECTION

This study will be conducted in Emergency Department; HUSM from 1st of November 2016 to 31st January 2017.Based on 2015 registration data, the population size was 13550 cases. By using systematic random sampling 384 cases will be selected .The selected starting point is randomly choose which is number 2 and the 37th person on the list would be chosen as a participant followed by the 72th and so on. The field work will be done by medical staff of the A&E and by resident working in the A&E .The patient who will participate in this study will undergo similar process and routine procedure as other patient who visit emergency department. The patient presenting to Emergency Department,HUSM will be triage by triage officer immediately after registration. The triage office will classifies each patient for treatment on an establish triage system. "RED "the most severe category is life threatening that required immediate treatment. "YELLOW" condition that must be cared within one hour and."GREEN "is for non-urgent problem..The appropriateness of the attendance then will further evaluate base on validated flow chart. The classification of appropriateness of ED utilization into appropriate and inappropriate was based on a decision flow chart. This flow chart was developed based on four guidelines the triage guidelines from HKL8, HUKM, American College of Emergency Physician (ACEP), and the explicit ED criteria of Davis Medical Centre, University of California. The initial drafted decision flow chart was reviewed by ED experts such as the ED head departments of HKL and Hospital

Kota Bharu (HKB). In order to classify each and every case into appropriate or inappropriate, the 6 steps described in Table I were applied. If a case was noted to be appropriate in any step, (example, in step 1, arriving by ambulance), the subsequent steps were omitted. Basically, the inappropriateness is classified after exhaustively ruling out all possibilities of appropriateness in all 6 steps. A pilot study was conducted in May 2001 on 80 cases at ED-HUSM. Two ED experts were asked to review identical sets of ED case records, by using the proposed decision flow chart. The agreement (Kappa statistic) between the two experts was .0.851 (asymptotic standard error of 0.07, p value <0.001), which was considered almost perfect agreement. Detailed medical record for each of the study sample was obtained from the record office. The data collected were age, sex, address, date of visit, day of visit, time of visit, mode of arrival and triage category. Other information such as clinical presentation, findings of physical examination, results of investigation done, diagnosis made and the management or treatments given were also collected. Based on our decision flow chart, the cases were classified by the researcher into appropriate or inappropriate ED utilization.Data will be enter and analyse using SPSS version 18.01.proportion of inappropriate ED cases with its 95%confidence interval will be determine.

DATA COLLECTION

Data collection will be done using a specifically designed PROFORMA form. (Appendix 1). The variables analysed are categorical and numerical variables. The outcome variable is whether patient's attendance to emergency department is appropriate or inappropriate.

STUDY VARIABLES

Demographic parameters:

1. Age (years)

2. Gender (Male, Female)

3. Race/ Ethnicity (Malay, Chinese, Indian, Siamese, Others)

4. Occupation (Job description, Unemployed, Unknown)

5. Time of attendance

ASSOCIATED FACTORS

Diagnosis of inappropriate case

Outcome

1.appropriate visit

2.inappropriate visit

STATISTICAL ANALYSIS

Statistical analysis will be done using Statistical Packages for Social Science (SPSS) version 18.0. Descriptive analysis will be expressed as frequencies, means with standard deviation and percentages and presented as bar chart, pie chart, or line graphs as seen appropriate. Statistical significance will be calculated between groups using independent t-test for continuous variables and chi-square test for categorical variables. Logistic regression analysis will be used to determine the factors that are significantly associated with the outcome of the study. A p value < 0.05 is considered as statistically significant for all statistical analysis in this study

2.6   Gantt chart

PROJECT ACTIVITIES	2016		2017											
Research Activities	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Patient / Subjects Recruitment	████	███	██▶											
Data Collection		███	████	███	██▶									
Data Analysis / Interpretation			███	████	███	██▶								
Report Writing						███	████	████	████	████	██▶			
Presentation & Submission of Reports										███	████	████	██▶	
Project Completed											███	████	██▶	
Submission of Research Papers												███	████	██▶

MILESTONES:

- 1. From November 2016 to January 2017: Completion of subjects recruitment

- 2. From January 2017 to April 2017: Completion of data collection and data analysis with interpretation. Beginning of report writing (25%).

- 3. From June to October 2017: Completion of report writing and presentation and submission of report.

- 4. From November to December 2017: Project completed. Submission of research paper

SAMPLE DATA COLLECTION FORM

Reference Number/ RN: _____

DOA: _____/_____/_____

TRIAGE:_____

Demographic parameters:

1. Age : _____ years _____ months

2. Sex : Male / Female

3. Race/ Ethnicity : Malay / Chinese / Indian / Siamese / Others:_____

4. Occupation : Job description:_____

Associated factor

1.Method of coming to hospital
   a)ambulance

   b)referral

   c)walk in

2.distance from hospital:_____

3.time of attendance:_____

PRESENTATION AT EMERGENCY DEPARTMENT

CHIEF COMPLAINT:_____

PHYSICAL EXAMINATION
   Temperature:_____
   Blood pressure:_____
   RR:_____
   GCS_____

INVESTIGATION:
 Blood investigation_____

 Imaging_____

 Other_____

FINAL
DIAGNOSIS:_____

MANAGEMENT:
 a)admission_____

 b)specialty consultation_____

 c)medication_____

OUTCOME(based on validation flow chart)

APPROPRIATE
INAPPROPRIATE

Expected result

Table I : General characteristics of the patients. (n=)

Characteristic	Appropriate n (%)	Inappropriate n(%)
Age (year)		
0-15		
16-30		
31-45		
>45		
Gender		
Male		
Female		
Ethnic group		
Malay		
Chinese		
Indian		
Other		

Table II : General characteristics and type of the illness of the patient   (n=)

Variables	B	OR(95%CI)	pvalue
Age			
0-15 years			
16-30 years			
31-45 years			
>45 years			
Gender			
Male			
Female			
Race			
Others			
Malay			
Type of illness			
Upper respiratory tract infection			
Acute gasteroenteritis			
Others			

Table III: **Diagnoses and distribution of inappropriate cases in ED-HUSM**

Diagnosis	N(%)

Table IV: Time pattern of inappropriate cases over 24hours in 1st November 2016-31st January 2017

TIME	NO(%)
12AM-2AM	
2AM-4AM	
4AM-6AM	
6AM-8AM	
8-AM-10AM	
10AM-12NOON	
12NOON-2PM	
2PM-4PM	
4PM-6PM	
6PM-8PM	
8PM-10PM	
10PM-12AM	

DECISION FLOW CHART

Table I: Detail description of steps in the decision flowchart

Step 1: On arrival

Condition	Decision
Arrive by ambulance-	Appropriate
Paramedic run -	Appropriate
Referred cases	Appropriate
Walk-in-	**Further evaluation**

Step 2: Triage selection

Condition	Decision
By colour coding	
Red/yellow	Appropriate
Green	**Further evaluation**

Step 3: Presentation

A. The following presentations will be determined as "appropriate":

1. Severe chest pain

2. Respiratory distress/Failure

3. Severe concussion/Open fracture of skull

4. Severe asthma/Acute exacerbation of asthma

5. Severe burns - more than 20% of body surface in adult and 15% in children

6. Shock - Hypovolemic/Cardiogenic/Neurogenic/Anaphylactic or other causes of shock

7. Polytraumatised/Multiple injured patient

8. Unconsciousness/Comatose

9. Severe bleeding

B. The following presentations need further assessment:

1. Allergy or hay fever

2. Anxiety

3. Mild back pain, able to walk without assistance

4. Drug or alcohol detoxification

5. Dysuria (mild), female

6. Mild eye irritation without sign of infection

7. Foot problems (blister, pain, ingrowing toenail, wart)

8. Dental problems

9. Chronic sinusitis

10. Minor skin infection, sore

11. Hepatitis exposure or symptoms

12. Sore throat

13. Sleep disorder

14. Localized sunburn without blisters

15. Suture removal

16. Muscle aches

17. Neck pain (no history of acute trauma)

18. Painless urethra discharge

19. Physical examination requests

20. Pruritus without rash

21. Simple, localized rash

22. Weakness - appears well

23. Diarrhoea

24. Chronic dizziness

25. Sexual disease exposure

26. Constipation, 3 days or less

27. Minor contusion or abrasion

28. Mild cough (without haemoptysis), ear pain or respiratory impairment

29. Minor headache without neuralgic impairment

30. Minor rectal pain or itching

31. Chronic recurrent haematuria

32. Minor skin sore, not infected

33. Immunizations and (-globulin request

34. Joint pain,

35. Lice or scabies (suspected or real)

36. Trauma follow-up (minor injuries originally treated

    elsewhere)

37. Mouth blisters

38. Wound check

39. Vaginal bleeding - minor (1 pad in past 6 hours)

40. Pregnancy testing

41. Prescription refills

42. Vaginal discharge

43. Upper respiratory infection symptoms

Step 4: Physical examination

A. The following physical signs need **further assessment**:

1. Temperature 35o to 38.5oC (38.3∫C for age >60 years old)

2. Respiration 12 to 20 per minute

3. Blood Pressure 90 to 160 mm Hg systolic

   60 to 110 mm Hg diastolic

4. Pulse 60 to 110 per minute

B. The following physical signs will be determined as **"appropriate"**:

1. Physical signs (listed in step 4.A) with outside the limits mentioned above

2. Glasgow Coma Scale of less than 12

3. Burns >20 % in adult and >15 % in children of body surface.

Step 5: Investigation

If the following investigation were requested, it will be considered **"appropriate"**:

1. Imaging studies; radiography, ultrasound studies, computer tomography, Magnetic resonance imaging

2. Laboratory tests on body fluids: e.g. ABG, electrolytes, and blood urea nitrogen

3. Tests not on body fluids; e.g. ECG, EEG, slit lamp examination

4. Otherwise, further evaluation is needed.

Step 6: Management

The following management will determine as "appropriate":

1. Hospitalization or IV fluids treatment

2. Restraints

3. Oxygen

4. Specialty consultation

5. Prescription medications administered in ED (other than tetanus mmunization or oral

analgesics)

6. Treatment of an orthopedic problem by splinting with plaster, knee immobilizer,

crutches, or by reducing a

   fracture or dislocation

7. Transfusion of blood products