Characteristics of Unscheduled Emergency Department Return Visit Patients within 48 Hours in Thammasat University Hospital

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Background: *Auditing the return visit charts of patients who returned within 48 hours is a very important method of quality assurance. Several factors can be possible causes of unscheduled emergency return visits. Therefore, identifying these factors is critical to decreasing the number of unnecessary visits in this group.*

Objective: *To determine rate, common initial presentation and cause of unscheduled emergency department return visits within 48 hours at Thammasat University Hospital.*

Material and Method: *The present study design involves retrospective observational study of patients who returned to the Emergency department (ED) within 48 hours after being discharged from the ED. Data was collected from August 1, 2009 to July 31, 2010. Patient age, gender, triage level, patient-in time, patient-out time, length of stay, chief complaint, first and second visit diagnoses and disposition after second visit were recorded by chart review. The factors and causes of revisits were classified by the author as illness-related, patient-related, doctor-related and/or healthcare system-related.*

Results: *A total of 307(0.92%) patients returned visit to the ED within 48 hours during August 1, 2009 to July 31, 2010. The most common chief complaint were dyspnea (75 cases or 24.4%), abdominal pain (53 cases or 17.3%), bleeding per vagina (28 cases or 9.1%). The rates of revisit that were related to factors of illness, patients, doctors and healthcare system were 60.6, 8.5, 28.3 and 2.6, respectively. Chi-squared was used for categorical data.*

Conclusion: *Unscheduled ED return visit patients represent high risk patients. Patients in this group are associated with various factors. The present study indicates that the most common factor behind return visits were illness-related. Illness-related and patient-related factors were significantly associated with discharged patient. Observational units could reduce unnecessary return visit in this group. Doctor-related and healthcare-related factors were significantly associated with admitted return visit patients. Emergency physician training system and guideline implementation for doctors could reduce unexpected early discharge in this group.*

Keywords: *Return visits, Emergency Department*

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Emergency department (ED) crowding is one of the most common problems in tertiary care hospitals[1-5]. Many factors can affect this problem such as increased patients coming to the emergency room, inadequate inpatient beds[6]. From this problem stems an increase in the length of stay in the emergency room and also higher healthcare costs[7].

The emergency department is a unit representing a major component of health care expenditures[8]. Patients who return visit to the emergency department within a brief period of time are the group that can be most targeted for a decrease in the number of visits. Several factors were identified as possible causes of unscheduled emergency return visits[9]. Therefore, identification of these factors is an important method for decreasing unnecessary visits by this group.

An unscheduled return visit is defined as a patient presentation for the same chief complaint within 72 hours of discharge from the ED[10,11]. Previous research has demonstrated different results in different time frames.

Pierce et al reported a rate of 3.0% in return visits within 2 days[9]. Hu reported a rate of 4.9% in return visits within 7 days[12]. Gordon et al reported a

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rate of 2.7% in return visits within 3 days[13] Keith et al reported a rate of 3.4% in return visits within 72 hours[14]. Liaw et al reported a rate of 1.9% in return visits within 3 days[15]. The auditing return visit charts who returned within 48 hours is a very useful tool in the quality improvement of EDs and the maintenance of a high level of care. Therefore, the author has chosen to study patients who made a return visit within 48 hours.

Earlier, Pierce et al. concluded that the causes of return visits are related to major factors such as illness-related factors, patient-related factors, doctor-related factors and healthcare system-related factors. Pierce et al found that patient-related factors were responsible for a majority of repeat visits (53%) followed by doctor-related factors (18%). In a 2006 Taiwan study, Wu et al[16] found illness-related factors were responsible for a majority of repeat visits (81%) followed by patient-related factors (10.9%) and doctor-related factors (8.2%). It is thus possible that factors responsible for return visits can be varied in different ED and healthcare system.

Objective

The purpose of the present study was to determine rate, common initial presentation and cause of unscheduled emergency department return visits within 48 hours at Thammasat University Hospital.

Material and Method

The present study was performed in the ED of Thammasat University Hospital, a 460 inpatient bed tertiary-care teaching hospital with more than 35,000 ED visits per year. The present study design involves retrospective observational study of patients who returned to the ED within 48 hours after being discharged from the ED from August 1, 2009 to July 31, 2010. Patients who made previously scheduled return visits to the ED were excluded. Emergency nurses recorded all patients who made return visits. The author rechecked patient names against a database compiled by the medical record and information technology unit. Patient age, gender, triage level, patient-in time, patient-out time, length of stay, chief complaint, first and second visit diagnoses and disposition after the second visit were recorded by chart review. The causes of revisit were classified by the author as being the result of factors pertaining to the illness, patient, doctor and/or healthcare system. The present study was approved by the institutional ethical committee. All data were analyzed with SPSS software. Chi-squared was used for categorical data.

Results

There were 33,157 patient visits to ED of Thammasat University Hospital from August 1, 2009 to July 31, 2010. There were a total of 307 (0.92%) patients who made return visits to the ED as shown in Table 1.

The most common age groups in the present study were 21-30 and 71-80 years. Most of the return visit patients are classified in the urgency triage level. Typically, patients often come in the morning shift and are discharged in the afternoon shift with a short length of stay in ED (less than 6 hour). Medicine patients make up the most common diagnostic group in return visit patients.

The most largest proportion of patient dispositions after second visit was discharged (194 patients or 63.2%) followed by admit to the ward (90 patients or 29.3%), admit to the ICU/CCU (11 patients or 3.6%), surgery (6 patients or 2%) and referred to other hospitals (6 patients or 2%).

The rates of revisit that were related to factors of illness, patient, doctor and healthcare system were 60.6, 8.5, 28.3 and 2.6, respectively.

The most common chief complaint were dyspnea (75 cases or 24.4%), abdominal pain (53 cases or 17.3%), bleeding per vagina (28 cases or 9.1%).

The most common presentations were bleeding per vagina in the younger group and dyspnea in the elderly group. The most common first diagnosis were peptic ulcers in the younger group and COPD exacerbation in the elderly group, as shown in Table 2.

Data from Table 3 show that of the characteristics of misdiagnosed cases, abdominal pain was the most common chief complaint. There were 16 patients presented with abdominal pain who had been misdiagnosed at their initial presentation to the ED, five patients were later diagnosed with acute appendicitis, five patients with intestinal obstruction, three patients with acute cholecystitis and one patient each with ureteric stones, spontaneous bacterial peritonitis, and acute gastroenteritis, respectively.

Data from Fig. 1 show that common presentation of return visit patients that are significantly associated with discharged patients are bleeding per vagina, vertigo, headache, blunt injury. On the other hand common presentation of return visit patients that are significantly associated with admitted patients are alteration of consciousness, dyspnea.

Data from Fig. 2 show that common final diagnoses of return visit patients that are significantly associated with discharged patients are complete abortion, URTI, muscle strain, soft tissue injury,

Table 1. Characteristics of 307 unscheduled ED return visits

Variable	Number	Percentage
Gender		
Male	134	43.6
Female	173	56.4
Age (year)		
Younger than 1	6	2.0
1-10	37	12.1
11-20	26	8.5
21-30	54	17.6
31-40	38	12.4
41-50	29	9.4
51-60	27	8.8
61-70	34	11.1
71-80	39	12.7
81-90	15	4.9
91-100	2	0.7
Triage level		
Immediate	1	0.3
Emergency	91	29.6
Urgent	195	63.5
Trauma	20	6.5
Patient-In time		
Morning shift	115	37.5
Evening shift	111	36.2
Night shift	81	26.4
Patient-Out time		
Morning shift	98	31.9
Evening shift	122	39.7
Night shift	87	28.3
Length of stay		
0-6 hours	286	93.2
6-12 hours	17	5.5
12-18 hours	4	1.3
Department groups		
Medicine	164	53.4
Surgery	46	15.0
Pediatrics	37	12.1
OB-GYN	35	11.4
Psychiatry	15	4.9
Orthopaedics	5	1.6
ENT	5	1.6
Final disposition (after second visits)		
Admit ward	90	29.3
Admit ICU/CCU	11	3.6
Discharge	194	63.2
Surgery	6	2.0
Refer	6	2.0
Reason for return visit		
Illness-related factors	186	60.6
Patient-related factors	26	8.5
Doctor-related factors	87	28.3
Healthcare system-related factors	8	2.6
Total	307	100

Table 2. First visit diagnosis classified by most common age group

	No. (%)	First visit diagnosis	No. (%)
Age 21-40			
Bleeding per vagina	27 (29.3)	Peptic ulcer	12 (13.0)
Abdominal pain	17 (18.5)	Blighted ovum	9 (9.8)
Dyspnea	11 (11.9)	Threatened abortion	9 (9.8)
Total	92 (100)	Total	92 (100)
Age 61-80			
Dyspnea	29 (39.7)	COPD exacerbation	12 (16.4)
Abdominal pain	10 (13.7)	Peptic ulcer	5 (6.8)
Vertigo	7 (9.6)	Peripheral vertigo	5 (6.8)
Total	73 (100)	Total	73 (100)

COPD: chronic obstructive pulmonary disease

Table 3. Characteristic of misdiagnosed cases in return visit patients

Variable	Number	Percent
Gender		
Male	22	40
Female	33	60
Age		
61-70	9	16.4
71-80	8	14.5
21-30	7	12.7
31-40	7	12.7
Patient-In time		
Morning shift	21	38.2
Evening shift	17	30.9
Night shift	17	30.9
Patient-Out time		
Morning shift	15	27.3
Evening shift	21	38.2
Night shift	19	34.5
Final disposition (after second visits)		
Admit ward	36	65.5
Admit ICU/CCU	2	3.6
Discharge	14	25.5
Surgery	3	5.5
Chief complaint		
Abdominal pain	16	29.1
Dyspnea	9	16.4
Vertigo	5	9.1
Falling	3	5.5
Blunt injury	3	5.5
Chest pain	3	5.5
Fever	3	5.5

hyperventilation syndrome, threatened abortion, peripheral vertigo, dyspepsia and COPD exacerbation. On the other hand, final diagnoses of return visit patients that are significantly associated with admitted patients are acute appendicitis, acute diarrhea and asthmatic attack.

Data from Fig. 3 show that doctor-related and healthcare system-related factors are significantly associated with admitted patients. Illness-related and patient-related factors are significantly associated with discharged patients.

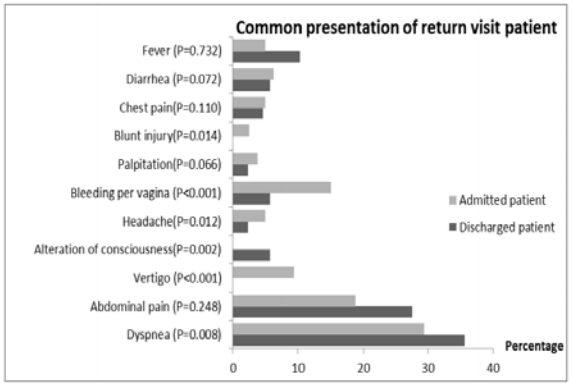
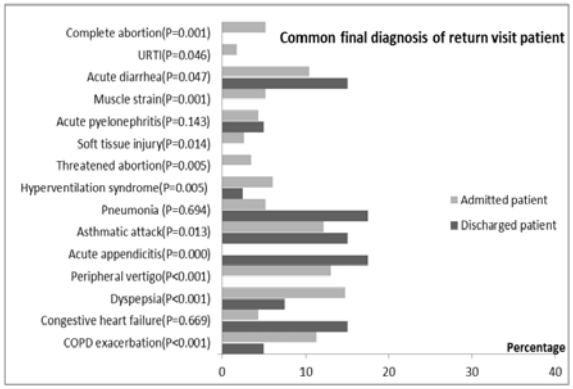


Fig. 1 Common presentation of return visits between admitted and discharged patients



URTI: upper respiratory tract infection COPD: chronic obstructive pulmonary disease

Fig. 2 Final diagnosis of return visit patient between admitted and discharged patient

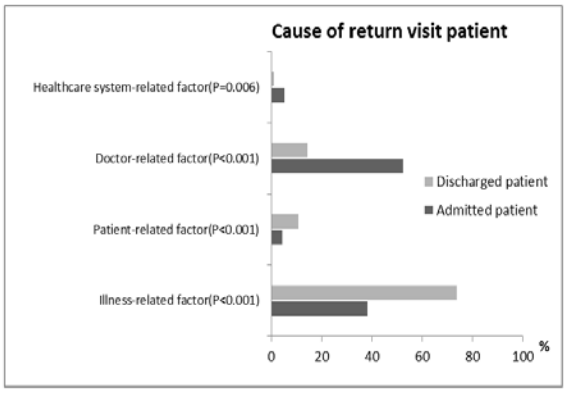


Fig. 3 Cause of factor-related return visit between admitted and discharged patient group

Discussion

The incidence rate of 0.92% of ED return visits is comparable to those ascertained in a previous study by Wong et al who found an incidence rate of 0.7%[17].

Those in the 21-30 years age group make up the bulk of return visit patients. One possible explanation for this is the mobility and health-seeking behavior in this age group. Most of these patients usually visit in the afternoon shift. A fewer number of patients as compared with official time is one of the reasons for their initial and repeat attendances at the ED. Most in this group (68.5%) were discharged by doctors after second visits showed that minor diseases accounted for their return visits. The most common reason for return visits in this group were illness-related factors (70.4%) followed by doctor-related factors (20.4%).

Those aged 71-80 years were part of the second most common age group. Their 41% rate of admission after initial discharge is higher than the younger group's rate of 27%. The probable reason for this disparity is due to more rapid progression of disease in the elderly patient than in the younger group. The most common reason of return visit in this age group is illness-related factor (53.8%) and doctor-related factor (33.3%) respectively. McCusker et al found that male gender, living alone, number of functional problems were independent predictors of repeat visits. The development of screening questions can reduce the demand for ED care in this age group[18]. However further study should be done in order to identify predictors of repeat ED return visits by elderly patient in this hospital setting.

The major reason behind return visits are illness-related factors which accounted for 60.6% of the entire total. This result is compatible with previous research by Wong et al that revealed recurrent disease processes accounted for over half of return visits (82%)[17]. Common diseases in the present study included peptic ulcers, acute gastroenteritis, acute exacerbation of asthma, COPD with acute exacerbation, headache and vertigo. Early discharge from the ED was associated with 12% of readmissions. It is likely that these short-term treatment failures and disease recurrences may have been anticipated if these patients could have been observed for longer periods before discharge. From the present study it was found that there was significant association between selected

factors and the disposition of the patient. The author found significant association between common presentation of return visits and discharged patients except for alteration of consciousness and dyspnea. From these data, the author concludes that the most of common presentations are more likely to be discharged upon return visits. The author found similar results in common final diagnoses as well. Therefore, it is possible that observation unit can reduce the rate of return visits in these groups[19,20].

The second most common reason for return visits involve doctor-related factors (28.3%). From the present study, the author found a significant association between doctor-related factors and admitted patient. Keith et al concluded that 32.3% of their revisits were avoidable[14]. These avoidable visits had various causes including medical management deficiencies, inappropriately prescribed follow-ups, improper education given to the patient. Treatment decisions and quality of care can be improved by implementation of clinical practice guidelines for doctors who work in ED[21-25]. Further prospective study should be evaluated for future improvement.

Rates of return visits caused by misdiagnosis (17.9%) are higher than the 9.1% rate found in a previous study by Liaw et al[15]. Subgroup analysis also showed that the elderly are the most common age group in misdiagnosed cases. The reason is that elderly patients often present with atypical presentations that may result in a misdiagnosis or early discharge from the ED, prompting return a visit to the ED shortly after being discharged.

The retrospective review has limitations in terms of methodology. The author analyzed data from medical records but did not represent actual practice. The precise reasons behind doctors' decision making in individual cases can not be fully identified. It can be either a true misdiagnosis or a normal progression of natural course of disease that's made diagnosis difficult in the early stage of disease. It is difficult to differentiate between the natural course of disease, suboptimal therapy, over-anxious reaction of the patient and medical errors[16].

There are many limitations of retrospective study such as bias of unblinded reviewer in justified cause of return visit. The author did not identify how many of our ED patients visited any other hospital EDs instead of making a return this hospital. Data were all collected from a tertiary care ED that may not be generalizable in other regions and hospital settings.

Further prospective studies are needed to identify improvement after implementation guidelines for doctors and to establish formal observational units.

Conclusion

Unscheduled ED return visit patients represent high risk patients. Patients in this group are associated with various factors. The findings of the present study indicate that most return visit factors are illness-related. Furthermore, it has been found that illness-related and patient-related factors are significantly associated with discharged patients. Observational units can reduce unnecessary return visit in this group. Doctor-related and healthcare-related factors are significantly associated with admitted return visit patients. Emergency physician training systems and implementation guidelines for doctors can reduce unexpected early discharge in this group.

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Potential conflicts of interest

None.

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การศึกษาลักษณะของผู้ป่วยที่เข้ารับบริการที่ห้องฉุกเฉินซ้ำภายในระยะเวลา 48 ชั่วโมงของโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ

อินทนนท์ อิ่มสุวรรณ

***ภูมิหลัง**: การทบทวนเวชระเบียนของผู้ป่วยที่เข้ารับบริการที่ห้องฉุกเฉินซ้ำภายในระยะเวลา 48 ชั่วโมง เป็นเครื่องมือที่สำคัญในการประกันคุณภาพการดูแลผู้ป่วยที่ห้องฉุกเฉิน สาเหตุของการเข้ารับบริการที่ห้องฉุกเฉินซ้ำของผู้ป่วยมีได้หลายสาเหตุ โดยสามารถจำแนกได้เป็น 4 สาเหตุ ได้แก่สาเหตุจากโรคของผู้ป่วย สาเหตุจากแพทย์ สาเหตุจากผู้ป่วยและสาเหตุจากระบบบริการสุขภาพ การวิเคราะห์สาเหตุที่เกี่ยวข้องสามารถช่วยลดอัตราการเข้ารับบริการซ้ำที่ห้องฉุกเฉินได้*

***วัตถุประสงค์**: เพื่อทราบอุบัติการณ์ อาการนำและการวินิจฉัยที่พบบ่อยของผู้ป่วยที่เข้ารับบริการที่ห้องฉุกเฉินซ้ำภายในระยะเวลา 48 ชั่วโมง และวิเคราะห์สาเหตุของการเข้ารับบริการซ้ำที่ห้องฉุกเฉินโรงพยาบาลธรรมศาสตร์เฉลิมพระเกียรติ*

***วัสดุและวิธีการ**: ศึกษาเชิงพรรณนาแบบเก็บข้อมูลย้อนหลังผู้ป่วยทุกรายที่เข้ารับ บริการที่ห้องฉุกเฉินซ้ำ ภายในระยะเวลา 48 ชั่วโมง ตั้งแต่วันที่ 1 เดือนสิงหาคม พ.ศ. 2552-31 กรกฎาคม พ.ศ. 2553 ผู้นิพนธ์ตรวจสอบรายชื่อผู้ป่วยที่เข้ารับบริการซ้ำจากระบบค้นหาข้อมูลผู้ป่วยที่งานเวชสถิติและสารสนเทศ ผู้นิพนธ์เก็บข้อมูลผู้ป่วยจากเวชระเบียนโดยเก็บข้อมูลด้านเพศ อายุ อาการนำที่ผู้ป่วยเข้ารับการรักษาที่ห้องฉุกเฉิน ระดับของความรุนแรงของโรค การวินิจฉัยโรคเวลาที่ผู้ป่วย เข้ารับการรักษาครั้งแรกและเข้ารับการรักษาซ้ำ ผลการรักษาของผู้ป่วยที่เข้ารับการรักษาซ้ำ และวิเคราะห์สาเหตุ ที่ทำให้ผู้เข้ารับบริการซ้ำ ข้อมูลที่ได้นำมาประมวลผล หาความถี่ของแต่ละปัจจัยและใช้สถิติ Chi-square ในการหาความสัมพันธ์ของแต่ละปัจจัย*

***ผลการศึกษา**: ผู้เข้ารับบริการซ้ำที่ห้องฉุกเฉินทั้งหมด 307 ราย คิดเป็นร้อยละ 0.97 ของผู้เข้ารับบริการที่ห้องฉุกเฉินทั้งหมด อาการนำที่พบบ่อย 3 อันดับแรก ได้แก่หอบเหนื่อย 75 ราย (ร้อยละ 24.4) ปวดท้อง 53 ราย (ร้อยละ 17.3) และเลือดออกทางช่องคลอด 28 ราย (ร้อยละ 9.1) การวินิจฉัยโรคที่พบบ่อย 3 อันดับแรกได้แก่โรคกระเพาะอาหารหอบหืดเฉียบพลัน ลำไส้อักเสบ สาเหตุของการเข้ารับบริการซ้ำจำแนกได้เป็นสาเหตุจากโรคของผู้ป่วยสาเหตุจากแพทย์ สาเหตุจากผู้ป่วยและสาเหตุจากระบบบริการสุขภาพ คิดเป็นร้อยละ 60.6, 28.3, 8.5 และ 2.6 ตามลำดับ*

***สรุป**: ผู้เข้ารับบริการที่ห้องฉุกเฉินซ้ำเป็นกลุ่มผู้ป่วยที่มีความสำคัญที่แพทย์ห้องฉุกเฉินควรให้ความสนใจ สาเหตุของการเข้ารับบริการซ้ำสามารถจำแนกได้หลายประการ สาเหตุส่วนใหญ่เป็นสาเหตุจากโรคของผู้ป่วย รองลงมาคือปัจจัยจากแพทย์ ปัจจัยจากผู้ป่วยและปัจจัยจากระบบบริการสุขภาพตามลำดับ จากการศึกษาพบว่าสาเหตุจากโรคของผู้ป่วยและสาเหตุจากผู้ป่วยมีความสัมพันธ์กับผู้ป่วยที่แพทย์อนุญาตให้กลับบ้านได้ ควรจัดตั้งห้องสังเกตอาการเพื่อให้การดูแลผู้ป่วยที่มีสาเหตุดังกล่าว สาเหตุจากแพทย์และสาเหตุจากระบบบริการสุขภาพมีความสัมพันธ์กับผู้ป่วยที่แพทย์รับไว้รักษาต่อในโรงพยาบาล การฝึกอบรมแพทย์ประจำบ้านสาขาเวชศาสตร์ฉุกเฉินและการจัดทำแนวทางปฏิบัติสำหรับการดูแลผู้ป่วยสำหรับแพทย์ห้องฉุกเฉินจะสามารถช่วยลดการเข้ารับบริการซ้ำด้วยสาเหตุดังกล่าวได้*