

Appropriateness of Medical Admissions from a Malaysian Public Primary Care Clinic

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Summary

Appropriateness of medical admissions from a Malaysian public primary care clinic (Outpatient Department, Hospital Ipoh) was assessed by two physicians using a modified appropriateness evaluation protocol. Of 122 admissions between 16/6/96 and 15/7/96, 107 records (88%) could be traced from the records office. Eighty percent (86/107) were found to be appropriate and 20% (21/107) inappropriate admissions. Inappropriate admissions included admissions to the wrong discipline and patients who could be investigated and stabilised as outpatients or could be referred to specialist clinics. Protocols, provisions for urgent referrals and medical updates for doctors are recommended.

Key Words: Medical admissions, Primary care, Appropriateness evaluation protocol

Introduction

Hospital care is the single most expensive component of the health care budget and in recent years the costs are rapidly rising¹. Inappropriate admissions are admissions where patients do not derive any significant benefit or where no active services are provided and where the best care can be rendered in a less costly manner at a lower level of care². A study by the Public Health Institute showed that 27% of patients admitted to Malaysian hospitals were discharged within 48 hours³. The majority were perceived to be inappropriate or avoidable.

Rosenblatt et al⁴ described the physician as a gatekeeper to the hospital who can exert a tremendous influence on the consumption of medical resources. Eisenberg⁵ in his article on "Physician Utilisation" stated that a group of Americans who represented less than half of 1% of the population determined how nearly 10% of the nation's gross national product would be spent. Because of the tremendous economic impact of physicians' decisions, it is important to explore factors governing medical

decision making and ways of utilising doctors to provide a more cost effective medical care.

Factors that influence a primary care doctor's decision whether to admit a patient include his level of expertise in managing the presenting illness. Social factors include poor compliance to medications at home, lack of family support and insistence by patients or referring doctor for admission. Lack of day care facilities, poor laboratory backup to do investigations as outpatients, lack of provision for urgent referrals are perceived as other factors resulting in inappropriate admissions.

The criteria extensively used to determine the appropriateness of admissions is the Appropriateness Evaluation Protocol (AEP)⁶ developed by a research group in Boston University. Using this criteria 10% to 35% of inappropriate admissions were found in over 40 Eastern Massachusetts Hospitals. In Malaysia studies also found inappropriate admissions varying from 6% (Kota Bharu Hospital²), 10.7% (medical 16.7%) in Seremban Hospital⁷ and 20% (medical admissions) in Kuala Pilah Hospital⁸.

The Outpatient Department (OPD) Hospital Ipoh is a walk-in public primary care clinic attached to a general hospital. It comprises of the general outpatient clinics for adults and children, specialised clinics for diabetic, hypertensive and asthmatic patients, a Well Person's clinic and staff family clinic.

The objective of this study was to assess the appropriateness of medical admissions from OPD, Hospital Ipoh into the general medical wards (please see footnote¹) using a modified version of the Appropriateness Evaluation Protocol (AEP)⁶ and to determine reasons and remedial measures for inappropriate admissions.

Materials and Methods

A retrospective review of all admissions from OPD into the general medical wards Hospital Ipoh in the one month period between 16/6/96 to 15/7/96 was carried out. Hospital records (bed head tickets) on all these admissions that could be traced from Records Office were reviewed by 2 assessors (physicians from the medical department, Ipoh Hospital). The criteria for appropriateness of admissions (see footnote²) used was the modified version of Appropriateness Evaluation protocol⁶ (Appendix 1). Formats used in evaluation are shown in appendices 2 and 3. All inappropriate admissions were then discussed by a committee comprising of the 2 assessors, the medical officer in charge of OPD, Hospital Ipoh and the acting sister in charge of OPD, Hospital Ipoh to determine reasons and contributing factors to inappropriate admissions and propose remedial measures. Admitting doctors were called to explain their reasons for admission when the committee had any doubts or queries.

Findings

During the study period 122 patients were admitted from OPD to the general medical wards. However only 107 case notes could be traced from Record Office

(88%). The remaining case notes were still in the wards (re-admissions, for doctor's summary and medical reports). Of the 107 admissions, 80% (86/107) were found to be appropriate. Twenty percent (21/107) were inappropriate. The findings on the 21 inappropriate admissions including presenting complaints, reasons for inappropriate admissions and contributing factors are summarised in Table I.

Discussion

In the study period between 16/6/96 to 15/7/96 the total OPD attendance was 22,778 with 292 admissions from OPD (1.3%). The admissions included medical 122 (42%), paediatrics 62 (21%), surgical 57 (20%) and orthopaedics 21 (7%). This study looked at medical admissions only. Compared with the total admissions into Hospital Ipoh in the study period (3,988), admissions from OPD were only 7.3%. Accident and emergency department (A&E) and specialists clinics accounted for the majority of admissions into Hospital Ipoh. Therefore in order to effectively reduce inappropriate admissions to Hospital Ipoh a further study needs to be done on admissions from A&E and specialists clinics.

Fried et al⁹ found that family physicians less frequently admitted patients inappropriately in contrast with studies for which physician specialities were not controlled. There is little published data locally comparing admissions by family physicians and other specialists.

Another limitation of the study is that it was conducted over a relatively short period (1 month). A longer period of study which also includes admissions to disciplines other than general medicine would give a better overall picture on OPD admissions.

Contributing factors to inappropriate admissions in this study can be divided into 3 categories. The first category is related to organisation system. One of the 2 doctors who admitted a patient with gastrointestinal bleeding into the medical ward (group 1 in Table I) thought that

1 General medical wards - excludes sub-specialities e.g. dermatology, nephrology & other disciplines such as surgical, orthopaedics, obstetrics & gynaecology, paediatrics

2 Appropriate admissions - an admission where patient deserves benefit from an acute medical condition or receives acute medical service within 24 hours of admissions

Table I
Inappropriate Medical Admissions from Outpatient Department, Hospital Ipoh Between 16/6/96 to 15/7/96 - Presenting Complaints/Diagnosis, Reasons for Inappropriate Admission and Contributing Factors

Group	Number of Patients	Presenting Complaints/ Diagnosis	Reason for Inappropriate Admissions	Contributing Factors
1	2	Gastrointestinal bleeding	Admission to wrong discipline (should be surgical)	<ol style="list-style-type: none"> 1. Lack of protocols to guide doctors on admissions 2. Fear of scolding from ward doctors
2	7	Uncontrolled diabetes mellitus (5) and hypertension (2)	Could be stabilised as outpatient	<ol style="list-style-type: none"> 1. Lack of knowledge and expertise on outpatient management of hypertension & diabetes mellitus 2. Lack of facilities to do pre-meal blood sugars (especially pre-dinner) as outpatient 3. Poor compliance of patients to treatment and diet
3	7	<ol style="list-style-type: none"> 1. Ankle swelling for investigation 2. Chest pain with diabetes mellitus & hypertension* 3. Bachache and chest pain 4. Fever for 4 days 5. Dyspnoea for Investigation 6. Bell's palsy (missed otitis media) 7. Chronic diarrhoea for one month** 	Could be investigated and examined further as outpatients	<ol style="list-style-type: none"> 1. Heavy workload 2. *Patient insisted on admission 3. **Referring private practitioner requested for admission
4	5	<ol style="list-style-type: none"> 1. Herpes Zoster ophthalmic division*** 2. Palpitation & giddiness (with normal ECG) 3. Aortic Incompetence 4. ? Drug reaction/ chicken pox 5. Nephrotic syndome* 	Should be referred to specialist clinic or admitted to sub-speciality	<ol style="list-style-type: none"> 1. *Patient insisted on admission 2. ***No provision for direct admission into sub-speciality 3. Lack of provision for urgent referrals to specialists for second opinion on non clinic days

such cases should be assessed by a physician first. The other doctor was scared to admit to another discipline for fear of being scolded by the ward doctors. OPD doctors were also not allowed to admit direct into subspecialties like dermatology, otolaryngology and ophthalmology which also contributed to inappropriate admission (group 4 in Table I). Such problems can be overcome if the various disciplines agreed on a common protocol that provides guidelines on admissions from primary care.

Another contributing factor is the lack of a mechanism for urgent referrals for specialist opinion on non clinic days. One patient with skin lesions was admitted inappropriately (group 4 in Table I) because the doctor could not rule out serious drug reaction although the differential diagnosis was chicken pox. Consultation with a dermatologist would have resolved the problem. Standing orders by some specialities for urgent cases to be admitted and for referrals from private practitioners for admission to be entertained, also contributed to inappropriate admissions. Changes in organisation system need to be made to overcome these problems.

The second category relates to individual physicians /staff. One contributing factor is the lack of expertise of primary care doctors in outpatient management of hypertension and diabetes mellitus. Regular updates on outpatient management of chronic diseases would reduce the number of uncontrolled diabetic and hypertensive patients been admitted. The doctors felt that availability of facilities to do pre-meal blood sugars (especially pre-dinner) would enable insulin dependent diabetics to be monitored and stabilised as outpatients. Poor compliance to medication and diet were also given as reasons contributing to admissions. However health education, involvement of family members in management, home glucose monitoring and home visits by diabetic trained nurses need to be considered by the doctors to improve compliance. More detailed history taking, physical examination and appropriate

investigations ordered would also reduce inappropriate admissions (group 3 in Table I). This problem is aggravated by the heavy workload in OPD. The number of patients seen by each primary care doctor has to be reduced if optimal quality of care is the goal.

The third category are social factors including patients who insisted on admissions and private practitioners requesting and expecting admissions for their patients. Dialogue between the hospital and the private practitioners; patient education; involvement of community and family in patient management are some measures that can overcome these problems.

This study was presented at the QA conference organised by the Family Health Division, Ministry of Health in Langkawi in 1996 where one of the objectives was to develop new national indicators for primary care. The appropriateness of referrals to medical wards by primary health care doctors has been chosen as one of the new national indicators for primary care. This is timely in view of the rising costs of hospitalisations and health care.

Hospital utilisation reviews using appropriateness evaluation protocols has been used as a cost containment strategy to reduce hospital utilisation, expenditure and generate costs savings. Therefore regular hospital utilisation reviews by Malaysian public hospitals is recommended as a strategy to effectively reduce costs of inappropriate admissions.

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References

1. Wickizer TM, Wheeler JR, Feldstein PJ. Does utilization review reduce unnecessary hospital care and contain cost? *Med. Care.* 1989; 27: 632-47.
2. Kandasami P, Parkash K. A study of the Appropriateness of Admission Practices to selected units of Hospital Kota Bharu over a three month period 1990 (presented at Persidangan Pengarah-Pengarah, Kementerian Kesihatan Malaysia, Kuala Lumpur 1990).
3. Study of Hospital Utilisation in Peninsular Malaysia. Public Health Institute, Ministry of Health. July 1983-89 (personal communication).
4. Rosenblatt RA, Moscovice IS. The physician as a gatekeeper. Determinants of physician's hospitalization rates. *Med. Care* 1984; 22: 150-9.
5. Eisenberg JM. Physician Utilization. The State of research about Physician's Practice Patterns. *Med. Care* 1985; 23: 461-82.
6. Gertman PM, Restucca JD. The appropriateness evaluation protocol. A technique for assessing unnecessary days of hospital care. *Med. Care* 1981; 19: 855-71.
7. Kulasekram, Sree Raman S. Inappropriate admissions to Seremban Hospital 1990 (findings presented at QA Conference, Ministry of Health, Langkawi 1996).
8. Sree Raman S. Inappropriate admission Kuala Pilah Hospital Negeri Sembilan (presented at QA Conference, Ministry of Health, Langkawi 1996).
9. Fried RA, Main DS, Calonge BN. Appropriateness of hospital use by family physicians. *J. Am. Board Fam. Pract.* 1994; 7: 229-35.

APPENDIX 1

Criteria of Admission Appropriateness* (Modified by Physicians in Kuala Lumpur in 1991)

A Severity of Illness Criteria	NO	YES
1. Sudden onset of unconsciousness or disorientation (coma or unresponsiveness)		
2. Pulse rate: A. Less than 50 per minute B. Greater than 140 per minute		
3. Blood Pressure A. Systolic less than 90 or greater than 200mmHg B. Diastolic less than 60 or greater than 120mmHg		
4. Acute loss of sight or hearing		
5. Acute loss of ability to move body part		
6. Persistent fever = or >100 (p.o.) or >101 (R) or >5 days		
7. Active bleeding		
8. Severe electrolyte / blood gas abnormality (any of the following) A. Na <123mEq/L or >156mEq/L B. K <2.5mEq/L or >6.0mEq/L C. CO ₂ combining power (unless chronically abnormal) <20mEq/L or >36mEq/L D. Blood ph <7.3 or >7.45		
9. Acute or progressive sensory including motor, circulatory or respiratory embarrassment sufficient to incapacitate the patient (inability to move, feed, breathe, etc.). Note: Must also meet Intensity of Service criteria simultaneously in order to certify. Do not use for back pain		
10. EKG evidence of acute ischaemia must be suspicious of an MI		
11. Wound dehiscence or evisceration		
12. Suicidal attempt, parasuicide		

B Intensity of Service	NO	YES
1. Intravenous medication and/or fluid replacement (does not include tube feedings) 2. Surgery or procedure scheduled within 24 hours requiring: A. General or regional anaesthesia or B. Use of equipment, facilities, procedures available only in a hospital 3. Vital signs monitoring every 2 hours or more (may include telemetry or bedside cardiac monitor) 4. Chemotherapy agents that require continuous observation for life threatening toxic reaction 5. Treatment in an ICU 6. Intramuscular antibiotics at least every 8 hours 7. Intermittent or continuous respirator use at least every 8 hours		

OVERRIDE OPTIONS

8. Other services justifying appropriateness
 Yes () Description _____

9. Criteria met but inappropriate nevertheless:
 Yes () Description _____

Appropriateness of admission: NO YES
 Decision based on basis of override:
 Decision for admission failing to meet Criteria of Appropriateness
 (see list of reasons):

Reason 1 _____
 Reason 2 _____
 Reason 3 _____

List of Day Care Procedures		Code
SURGERY	Herniotomies in children	1
	Herniarrhaphy in adults: inguinal, femoral, epigastric, paraumbilical	2
	Orchidopexy	
	Circumcision	3
	Hydrocoele, epididymal cyst excision	4
	Vasectomy	5
	Breast Lumpectomy/excision biopsy	6
	Skin tumour excision/cryotherapy	7
	Varicose vein surgery excluding stripping	8
	High saphenous ligation	9
	Ingrowing toenail excision	10
	Pilonidal sinus excision	11
	Anal dilatation (e.g. Lord's procedure)	12
	Anal tag/wart excision	13
	Spincterotomy for anal fissure	14
	Hand surgery such as: ganglia, carpal tunnel release, trigger finger release, fixation of simple finger fractures. Removal wires/implants. Nerve repairs	15
	Arthrodesis of finger joints	16
	Urethral dilatation	17
	Lymph node biopsy	18
	Cytotoxic administration	19
Small skin grafts and local flaps	20	
ENDOSCOPY	Bronchoscopy	21
	Gastroscopy	22
	Colonoscopy/flexible sigmoidoscopy	23
	Cystoscopy/urethroscopy	24
GYNAECOLOGY	Dilatation and curettage	25
	Cryosurgery/diathermy (e.g. cervix, warts)	26
	Excision biopsies	27
	Cytotoxic administration	28
MEDICINE	Bone marrow biopsy	29
	Cytotoxic administration	30
	Transfusion for chronic anaemia	31
	Diagnostic tests (e.g. TRH, LHRH, Synacthen Tests, Insulin stress Test)	32
	Angiograms (coronary, hepatic, renal etc.)	33

APPENDIX 2

Appropriateness of Admissions of OPD to Medical Wards 16/6/96 - 15/7/96

Appropriateness

Date	RN	Doctor	Patient's Name	Reasons for Admission	1Y	1N	2Y	2N

APPENDIX 3

Study of Inappropriate Admissions from OPD to Medical Wards 16/6/96 - 15/7/96

Date	RN	Doctor	Patient's Name	Reasons for Inappropriate Admissions	Contributing Factors	Recommendations