

The role of acute internal medicine service in handling burden of medical access block in a tertiary hospital, Hospital Melaka experience

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ABSTRACT

Introduction: Access block is a major problem faced by most hospitals. It has led to congestions in emergency departments (ED) leading to sub-optimal or delayed treatment. Inevitably the spotlight falls on medical department, being accountable for the highest proportion of access block in ED.

Materials and Methods: This is a retrospective study looking at data collected during office hours on 79 working days, excluding weekends and public holidays in Hospital Melaka, Malaysia. Details on all medical access block cases that were reviewed were recorded including their locations, diagnosis, disposition decisions and if they received specialist input at the time of their initial assessment by the medical team in ED. The aim is to revolutionise patient admission flow by offering early specialist care with rapid assessment, investigation and treatment. Hence, improving the overall treatment efficiency and reduce medical access block.

Results: There were 1321 admissions. A total of 82% of the patients were admitted to the medical wards while 13% of them were given acute treatment in ED and discharged home with appropriate follow ups. We managed to resolve 18% of medical access block by re-triaging our cases and offering timely acute medical treatment. Nearly 90% of patients received first hand medical specialist input during the initial assessment by the Acute Internal Medicine (AIM) team in ED.

Conclusion: The significant resolution in medical access block with active screening, re-triaging and management of patients by the AIM team allows a more optimal hospital bed management. Patients also receive timely access to medical intervention with specialist care and stable patients can benefit from early supported discharge.

KEYWORDS:

Access block, Emergency Department congestion, Acute Internal Medicine (AIM), Acute Medical Unit (AMU), AIM physician

INTRODUCTION

Access block for emergency patients to inpatient beds is becoming an increasing problem globally. The Royal College of Emergency Medicine defined 'access block' as the situation

where patients who have been assessed in the emergency department (ED) are unable to leave the department due to a lack of capacity in the downstream system.¹ The causes for this congestion vary in different regions ranging from shortage of acute medical inpatient beds, financial restrictions on service provision to the availability of staff.² Effects on patient care include delays in being assessed and receiving the required care, reduced patient satisfaction, increased complaints, increased inpatient length of stay, increased cost of treatment and poorer outcomes.^{3,4} Delays are also associated with waiting for the relevant medical team to assess an acute medical patient in ED.

In 2017, there were a total of 39,378 admissions through ED in Hospital Melaka (HM) and 48% were medical patients. The Department of Internal Medicine has the largest number of inpatient beds with 338 beds; which comprised of 31% from total of 1091 beds in HM. The average number of medical admissions per day were 55 patients with average medical wards Bed Occupancy Rate (BOR) of 85% and Average Length of Stay (ALOS) of 5.28 days. Nearly half of medical patients had experienced access block upon admission and 37% of them had access block for more than 4 hours (Table I). This data were obtained from Bed Management Annual Report 2017 by Quality Unit, Hospital Melaka.

In the past, all acute medical admissions were managed by internal medicine specialists and consultants including subspecialty teams in Internal Medicine. However, as the pressures of the acute medical take increased and the need for earlier specialist input was recognised, it was realised that the systems of acute care needed to be changed. It was recognised that care for acutely admitted patients should ideally be concentrated in acute medical units (AMUs), however due to our limited resources the Acute Internal Medicine (AIM) service was developed in the ED as an alternative with an AIM specialist at the head. It should be stressed that AIM is not the same as emergency medicine, although the two specialties work together closely.

A physician's role in the management of acute medical problems is that he or she can assess and treat these patients in the most appropriate fashion within the first 24 hours of presentation to the ED, aiming either for an early discharge with appropriate outpatient follow-up or transfer to medical ward. Severely ill patients who need close observation but do

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not require intensive care will be treated by a dedicated physician leading the high dependency ward.

MATERIALS AND METHODS

AIM is a relatively new subspecialty in Malaysia. A career in acute medicine has been possible since 2005 via training on a previous General Internal Medicine (GIM) curriculum. However, since 2009, physicians have been able to be trained in AIM and in 2012, we had our first AIM Physician in Malaysia. The AIM curriculum was revised with defined competencies in 2018.

Our AIM team in ED in HM consist of one AIM specialist or internal medicine physician, one medical officer (MO) and two house officers (HOs). Office hours are from 8am to 5pm. The role of AIM team is to actively screen, review and manage all medical patients in ED who are stranded due to access block. The aim of this service is to reorganise patient admission flow by offering early specialist care with rapid assessment, investigation and treatment. Hence, improving overall treatment efficiency and reduce medical access block.

Primary objective: To determine the impact of AIM service in resolution of medical access block in ED, HM

Secondary objectives:

1. To determine the proportion of office hour medical admissions reviewed by AIM team in ED
2. To determine the proportion of cases with first hand medical specialist input.
3. To determine the proportion of cases with early discharge and appropriate outpatient follow-up

METHODOLOGY

This was a retrospective study looking at data collected from 13th August 2018 to 14th December 2018 during daily office hour reviews in ED excluding weekends and public holidays. Study was carried out for a total of 79 working days (n=79). All cases reviewed by the AIM team was recorded together with location of the patients to where they were triaged to; either red, yellow, green or if they were lodged in observation bay due to access block. We also recorded if they were reviewed by a specialist at the time of their initial assessment by the medical team and their disposition decision; either for admission to the medical wards, transferred to other centres, discharged home or referred for admission to other departments. The total number of medical admissions during office hours was retrospectively calculated from the admission census book in ED. All data collected were analysed according to objectives (Figure 1).

RESULTS

We reviewed 72% of medical cases out of a total 1321 medical patients who were admitted during office hours throughout the study period. Nearly 87% of patients received first hand medical specialist input during initial assessment by the AIM team in ED. Forty percent of the cases were in the red zone followed by 33% and 27% from observation bay and yellow zones, respectively. A very small percentage (<1%) were green zone cases (Table II).

A total of 82% of the patients were admitted to the medical wards while 13% of them were given acute treatment in ED and discharged home with appropriate follow ups. Four percent of the cases were identified as non-medical case and hence referred and admitted to the respective department wards. A small percentage (1%) of patients were transferred to other centres for services not available in HM (eg: emergency cardiac intervention or emergency neurosurgeries). In summary, we managed to resolve 18% of medical access block by re-triaging our cases and offering timely acute medical treatment (Table II).

DISCUSSION

The main impact of AIM team service in ED was the resolution of 18% of medical access block cases. These had allowed avoidance of inappropriate admissions and hence providing more optimal medical bed management.

Approximately 13% of the patients were given treatment in ED and discharged home with referrals to nearest primary care clinics, daycare service or an early AIM clinic appointment. (Table III). Further analysis was done on this group of patients and they were classified according to their main systemic diagnosis at presentation. The top two most common diagnoses were of cardiovascular and respiratory in nature. Cardiovascular cases include stable angina, stable heart failure, uncontrolled hypertension and patients that had resolved supraventricular tachyarrhythmia following acute treatment in ED. Respiratory cases included upper respiratory tract infection and pneumonia, where a quarter of the patients having concomitant mild exacerbation of asthma or chronic obstructive pulmonary disease. The third commonest diagnosis is viral fever including dengue fever cases without warning signs and deemed stable for home treatment with close primary care clinic follow up. Asymptomatic patients who came for semi-emergency procedures such as the reinsertion of a dislodged dialysis catheter, peritoneal tapping or blood transfusion were given immediate or early daycare appointment. The outcome of this study highlighted the importance of AIM service at ED level to screen and select cases eligible for early discharge. They were equipped with knowledge in internal medicine and outpatient clinic or daycare follow-up facility. This strategy also helped to reserve hospital beds for those who truly need advanced tertiary care.⁵

Early assessment by medical team with medical specialist input allows more efficient treatment and management of medical patients in ED. This possibly reduced complications related to delay of treatment and prevent misdiagnosis.⁶ In this study, 87% of the patients received specialist cares during their first assessment by our AIM team in ED. Cases given priority for review were red zone cases and medical access block in observation bay hence the reason why a higher percentage of cases are from these two zones.

Critically ill medical patients attending an average ED has outnumbered critical trauma emergencies by at least 5:1.⁷ Patients in red zone whom were generally more ill and required immediate attention were being co-managed both by ED and AIM teams. Improved relationship and co-management between both teams allowed delivery of

Table I: Data of admissions through Emergency Department, Hospital Melaka and medical access block for year 2017.
 [Source: Bed Management Annual Report 2017, Quality Unit, Hospital Melaka]

Admissions to Hospital Melaka, Year 2017	Total (n = 365)	Percentage (%)
Admissions through ED	39,378	100
Medical admissions through ED	18,750	48
All access block cases in ED	12,851	33
Medical access block in ED	8598	46
Medical access block > 4 hours	4751	37
Proportion of medical cases among all access block	8598/12,851	67

Table II: Data collected throughout study period during office hours and analysed

	Total (n = 79)	Percentage (%)
Office hours medical admissions	1321	100
Medical access block reviewed by AIM Team	956	72
Cases receiving first hand medical specialist input	836	87
Distribution of cases by zones:		
Red Zone	380	40
Yellow Zone	257	27
Observation bay	313	33
Green Zone	6	< 1
Decisions after AIM team assessment:		
Admit to medical wards	782	82
Discharge home with appropriate follow up	126	13
Refer to other specialty for non medical cases	39	4
Transfer to other specialised centres	9	1
Cases re-triaged and not admitted to medical wards	174	18

Table III: Classification of diagnosis by system for patients who were discharged home

Diagnosis	Total (n = 126)	Percentage (%)
Cardiovascular (stable angina, heart failure, supraventricular arrhythmias, uncontrolled blood pressure etc.)	34	27.0
Respiratory (respiratory infections, chronic lung diseases etc.)	25	19.8
Viral fever (Including dengue fever)	15	11.9
Gastroenterology & Hepatology (acute gastritis or gastroenteritis, ascites)	12	9.5
Neurology (transient ischaemic attack, seizure, vasovagal attack)	11	8.7
Allergic reaction or symptoms from side effects of medications	11	8.7
Musculoskeletal (cellulitis, costochondritis etc.)	9	7.1
Haematology (anaemia)	5	4.0
Genitourinary (urinary tract infection)	2	1.6
Miscellaneous	2	1.6

optimum care for critically ill medical patients. These patients were given priority for admission to medical wards including our physician lead high dependency ward and intensive care units. Perhaps we may see the formation of multidisciplinary emergency medical team with emergency physicians, acute medicine physicians and intensivists in providing care for critically ill medical patient in the future. Communication between our AIM team members with other medical colleagues in the general medical wards to assist admissions helped to hasten the admission process of our medical access block cases.

Four percent of the cases reviewed were diagnosed with a non-medical diagnosis and referred to the respective primary team for further assessment and admission. Nearly three

quarter (74%) of them were surgical cases (e.g. upper gastrointestinal bleeding, acute abdomen, obstructive jaundice etc.), followed by 12% of orthopaedic cases and seven percent each for both psychiatry and gynaecology cases. The introduction of AIM had helped in preventing inappropriate non-medical case admissions, delays in management as well as preventing potential complications. In the long run, this could be one of the effective solutions to reduce the proportion of medical access block in hospitals in Malaysia.

Our AIM service is currently limited to working during office hours due to limitation of manpower. We believe that our initiative may bring bigger impacts to the system if we

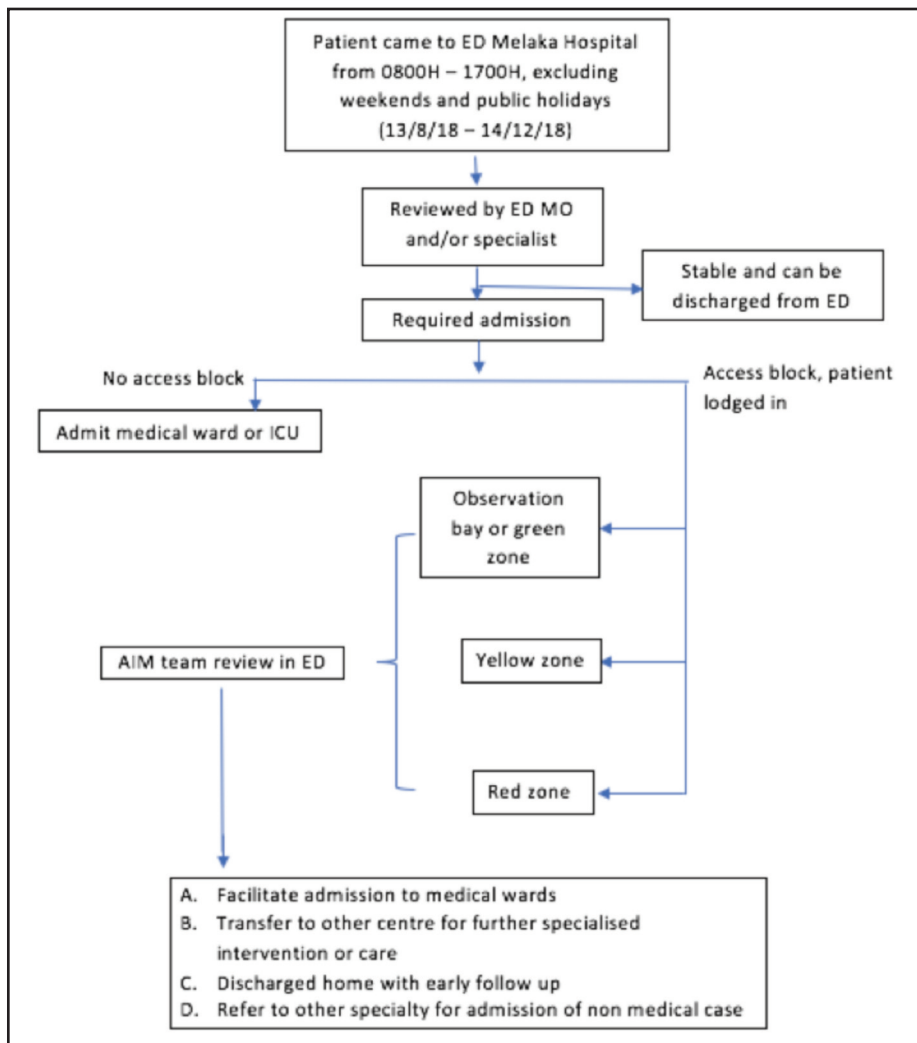


Fig. 1: Flow chart on admission pathway of medical patients.

manage to extend our service up to 24 hours and 7 days a week. We hope that HM may extend our AIM service into developing an AMU in which focused internist lead teams are stationed on site to rapidly assess and re-triage patients. This team may provide more holistic, patient centric care with better ownership, improved efficiency and less fragmentation in management.

LIMITATIONS AND CHALLENGES

This study has some limitations. First, this is a single centre study so the results may not be applicable to other hospital settings or healthcare facilities in Malaysia. The HM is currently using manual medical record system for most of our daily work. Hence, to obtain the total number of medical admissions during office hours, we had to calculate retrospectively the sum of admissions from the admission census book in ED. This manual calculation may not be accurate and we may have missed out cases and certain important data that might not be captured in the source document.

There was no data collected on follow ups of outcomes of patients after being discharged from ED. As a paper-based hospital, we faced difficulties to trace medical record of patients in a timely manner and we had no proper tagging system to identify any cases that were readmitted within a period of time. Hence, there were limitations to capture data of any readmission with similar symptoms within 28 days from the time they were discharged from ED. It would be interesting to study on this aspect to further evaluate the effectiveness of the AIM service provided.

CONCLUSIONS

The significant resolution in medical access block with active screening, re-triaging and management of patients by AIM team allows a more optimal hospital bed management and provide solutions for medical access block in ED HM. Early specialist care with rapid assessment, investigations and treatment offered within the first few hours of admission to ED may lead to better patient outcomes. Patients also received timely access to medical interventions and stable patients may benefit from early supported discharge.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval for this study was obtained from the Medical Research and Ethics Committee (MREC), Ministry of Health Malaysia with registered under National Medical Research Register (NMRR ID: 19A3634A50937) dated 2nd January 2020.

COMPETING INTERESTS

The authors declare that they have no competing interest.

FUNDING

The authors declare no financial disclosure.

AUTHORS' CONTRIBUTIONS

NUHA was responsible for the study design, data collection, data analysis and manuscript writing. CLG was involved in the design of the study, data collection, data analysis and manuscript editing. Both authors read and approved the final manuscript.

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