Characteristics Of Patients With Repeat Attendance At Emergency Department For Asthma Exacerbation

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Aim Of Study

- To identify the demographic characteristics of patients with repeat Emergency Department attendance for asthma exacerbation
We wanted to know “Who are these individuals with frequent ED visits?” because…

- The number of asthma related ED visits remains unacceptably high[1-3].
- Asthma uses a significant percentage of the health care budget.
- The economic burden of asthma in Singapore was estimated at US $33.9 million per annum [4].
- Thus asthma related ED visits is a specific problem targeted for reduction.
- Addressing this patient population might reduce ED visits and high cost of asthma care.
Methodology

• Analysis of computer database records of all asthma patients that were treated and discharge from ED of a tertiary hospital from January to June in year 2004.

• The exclusion criteria was admission to hospital at the time of the ED visit.

• Data analyzed included demographic characteristics such as age, sex, ethnicity and ED attendance in the past 40 days and past 24hrs for acute asthma.
Statistical analysis

- Statistical Program for Social Sciences (SPSS) was used.
- Descriptive summary measures of central tendency and frequency of study variables were computed when appropriate.
- Chi-square test was used to determine whether there was any association between repeat ED attendance and default rate for outpatient follow-up and to determine the demographic characteristics significantly associated with repeat ED attendance.
- Logistic regression was used to determine the demographic characteristics that were associated with increased risk for repeat ED attendance.
- All statistical analysis were 2 tailed and $p < 0.05$ was taken to be statistically significant.
Results

Fig1: Sex distribution

Total 750 patients
**Results**

Fig 2: Ethnicity distribution

- Chinese: 41%
- Malays: 29%
- Indians: 23%
- Others: 7%

Total 750 patients
Results

Fig 3: Age distribution

- Median age: 32 yrs
- 73.90% 21 years and below
- 26.10% more than 21 years

Total 750 patients
Fig 4: Patients with previous ED attendance for asthma

<table>
<thead>
<tr>
<th></th>
<th>past 40 days</th>
<th>past 24 hours</th>
<th>past 40 days and</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED attendance</td>
<td>132</td>
<td>64</td>
<td>1</td>
</tr>
</tbody>
</table>

Total 750 patients
More male 34.3% had repeat ED attendance and it was statistical significant $p < 0.0001$
Based on ethnicity more Malays’s 35.3% had repeat ED attendance and it was statistical significant $p = 0.002$
Based on age, more of 21 years and below 39.3% had repeat ED attendance and it was statistically significant $p < 0.001$. 

**Fig 7: Repeat ED attendance based on age**

<table>
<thead>
<tr>
<th>Age</th>
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</thead>
<tbody>
<tr>
<td>21 yrs and below</td>
<td>39.30%</td>
</tr>
<tr>
<td>&gt; 21 yrs old</td>
<td>21.30%</td>
</tr>
</tbody>
</table>

$p < 0.0001$
### Results

Table 1: Factors associated with increased risk of repeat ED attendance

<table>
<thead>
<tr>
<th>Factor</th>
<th>Odds Ratio</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male sex</td>
<td>3.03</td>
<td>&lt; 0.0001</td>
</tr>
<tr>
<td>Malay ethnicity</td>
<td>2.30</td>
<td>0.04</td>
</tr>
<tr>
<td>Age 21 yrs and below</td>
<td>1.61</td>
<td>0.015</td>
</tr>
</tbody>
</table>

Logistic regression
Results

Fig 8: Default rate for outpatient follow-up

- Although there was an observed higher percentage of defaults rate for out-patient follow-up in patients with repeat ED attendance compared to those without, it did not reach statistical significant p=0.16.
Discussion

• Though the default rate for out-patient follow up is not statistically significant it does not mean there is no clinical significance.

• The statistical insignificant could be that of Type II error. Sample size not large enough to detect statistical significant (n=290).

• The high default rate should be “flagged”.

• It may have implications on the attitude of this high risk group of patients towards their disease.
• Doing a detailed study in the form of questionnaire /survey to find out their perception of illness, psychosocial stressors, barriers to health care may lead to better understanding of this high risk patient and offer appropriate treatment and care.

• Eventually it might reduce ED visits and high cost of asthma care.
Conclusion

• This study helped us to predict asthma patients with frequent use of the ED.

• We found that:

  – Male sex, Malay ethnicity and young age of 21 years and below were associated with higher risk of repeat ED attendance.

• Did not find any association between repeat ED attendance and subsequent follow-up default rate in our patients.

