Mortality in the Department of Surgery, Alor Setar Hospital

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Summary
This is a retrospective study of the annual mortality that occurred in the Department of Surgery, Alor Setar Hospital, for the years 1995 to 1997. This study looks at the number of admissions to the surgical wards and categorizes the causes of death. The annual mortality rates were 2.60, 2.89 and 3.25 per hundred admissions for the year 1995, 1996 and 1997 respectively. Head injury was the leading cause of death whilst sepsis and advanced malignancies second and third commonest causes. We hope that with the publication of these figures, we can initiate more studies to analyse similar local data.

Key Words: Mortality, Head injury, Sepsis, Advanced malignancies

Introduction
Mortality is often perceived as a failure in the eyes of the doctors. It is a subject that most of us would be reluctant to discuss, leave alone publishing it. Unfortunately, this attitude does not help us in improving our standards, and service to the patients. Without a norm, it is difficult for us to gauge ourselves on where we stand and if our results are acceptable.

The objective of this study was to analyse the various diagnostic causes of mortality at the Department of General Surgery in Hospital Alor Setar. Such studies are scarce in this part of the world. We hope that by publishing our figures, other researchers may be able to do similar or comparative studies.

Materials and Methods
The total number of annual admissions and mortality were obtained from the record office. The causes of death were retrieved and analyzed from the summary of weekly departmental mortality meetings. Unfortunately 10 to 15% of the records were not retrievable due to poor record keeping. Causes of death are categorized. (Table I) Patients with significant injury in two or more systems are classified as multiple trauma regardless of the actual cause of death. Death classified as Orthopaedic causes are patients who are diagnosed with pelvic and/or femur fracture, with or without other bony fractures, but without other significant injury. The death is attributed to hypovolaemic shock. Patients who died of advanced malignancies are the patients diagnosed with advanced metastatic malignacies where only palliative care is provided. Deaths classified as sepsis are those with perforated viscerca, ascending cholangitis, intraperitoneal tuberculosis and pneumonia (excluding post-operative pneumonia). Deaths under the medical causes are myocardial infarction, pulmonary embolism, congestive cardiac failure and COAD. (Table II) However any death due to these causes after elective surgery are classified as Post-elective Surgery Mortality. A number of unclassified deaths are included into the miscellaneous causes. Table III shows the mortality of this group.
MORTALITY IN THE DEPARTMENT OF SURGERY

### Table I
Classification of Causes of Death

<table>
<thead>
<tr>
<th>Year</th>
<th>1995</th>
<th>1996</th>
<th>1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Injury</td>
<td>65 (41.1)*</td>
<td>56 (32.4)</td>
<td>63 (33.0)</td>
</tr>
<tr>
<td>Abdominal Injury</td>
<td>1 (0.6)</td>
<td>2 (1.2)</td>
<td>2 (1.0)</td>
</tr>
<tr>
<td>Chest Injury</td>
<td>3 (1.9)</td>
<td>5 (2.9)</td>
<td>6 (3.1)</td>
</tr>
<tr>
<td>Polytrauma</td>
<td>13 (8.2)</td>
<td>21 (12.1)</td>
<td>17 (8.9)</td>
</tr>
<tr>
<td>Adv Malignancy</td>
<td>10 (6.3)</td>
<td>23 (13.3)</td>
<td>36 (18.8)</td>
</tr>
<tr>
<td>Sepsis</td>
<td>23 (14.6)</td>
<td>22 (12.7)</td>
<td>29 (15.2)</td>
</tr>
<tr>
<td>GIT Bleeding</td>
<td>8 (5.1)</td>
<td>10 (5.8)</td>
<td>10 (5.3)</td>
</tr>
<tr>
<td>Burns</td>
<td>2 (1.3)</td>
<td>3 (1.7)</td>
<td>4 (2.1)</td>
</tr>
<tr>
<td>Medical Causes</td>
<td>9 (5.7)</td>
<td>9 (5.2)</td>
<td>10 (5.3)</td>
</tr>
<tr>
<td>Post-elec Surg Death</td>
<td>1 (0.6)</td>
<td>5 (2.9)</td>
<td>2 (1.0)</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>23 (14.6)</td>
<td>27 (15.6)</td>
<td>12 (6.3)</td>
</tr>
<tr>
<td>Total</td>
<td>158 (100.0)</td>
<td>183 (100.0)</td>
<td>191 (100.0)</td>
</tr>
</tbody>
</table>

*Number (percentage)

### Table II
Medical Causes of Death

- Myocardial Infarction
- Pulmonary Embolism
- Congestive Cardiac Failure
- Respiratory Failure

### Table III
Deaths Included in Miscellaneous Group

- Pancreatitis
- Ruptured AAA
- Hypersensitivity
- Hepatic Enchelopathy
- Orthopaedic Causes
- Death of Underdetermined Nature

### Table IV
Mortality Record Overview

<table>
<thead>
<tr>
<th>Year</th>
<th>1995</th>
<th>1996</th>
<th>1997</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Admissions</td>
<td>6912</td>
<td>7232</td>
<td>6527</td>
</tr>
<tr>
<td>Official Mortality</td>
<td>180</td>
<td>209</td>
<td>212</td>
</tr>
<tr>
<td>Mortality Record Retrieved</td>
<td>158</td>
<td>183</td>
<td>191</td>
</tr>
<tr>
<td>Mortality Rates*</td>
<td>2.6</td>
<td>2.89</td>
<td>3.25</td>
</tr>
</tbody>
</table>

*per 100 admissions

### Discussion

It should be stressed that these figures are produced from a general surgical department. There was no subspecialty such as neurosurgery, vascular surgery, paediatric surgery or cardiothoracic surgery in this hospital at the time of the study.

The actual reason for a drop in the total number of admission in 1997 is undetermined. It is obvious that the three leading causes of death are head injury, sepsis and advanced malignancies. It should be pointed out that the majority of mortality classified as polytrauma actually died of head injury. If these figures were added, mortality due to head injury would be much higher. These victims are mostly motorcyclists who did not wear crash helmets, which concurs with the recent study conducted at Kulim Hospital (unpublished). There were a total of eight post-elective surgery deaths in three years. With the exception of two...
patients, the mortality in this group are from patients who died within the same hospital admission after liver resections for hepatoma, Whipple's Procedures for carcinoma of head of pancreas or oesophagectomy for carcinoma of the oesophagus. The two exceptions were post-operative myocardial infarction after hemithyroidectomy and congestive cardiac failure after pyelolithotomy. We are uncertain as to the reason for the slight increase of our mortality over the years.

This is a retrospective audit of mortality in a General Surgical Department, which handles all types of surgical conditions. There are shortcomings, which are mainly due to the poor record keeping. With computerization of the hospital records, we hope that a better medical record keeping will provide us with more comprehensive figures for the years to come.

As the figures of mortality from Malaysian hospitals even around the Asian nations are scarce, we hope that with the publication of these figures, we could initiate more studies to emerge from Malaysian hospitals. Furthermore it may be used as a yardstick for various hospital to assess our own standard.

**Acknowledgement**

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**References**