A subdural haematoma (SDH) is a collection of blood between the dura matter and the arachnoid membrane. A prospective cross sectional descriptive study of all patients admitted with subdural haematoma as diagnosed on CT scan was conducted at the Nakuru level five hospital between 1st January 2015 and 30th November 2015. Four hundred and forty five patients were admitted with a diagnosis of head injury. Of these a total of sixty seven (67) patients were diagnosed on head CT Scan to have a subdural haematoma. There were sixty males and seven females with a male to female ratio of 8.6:1. The age ranged from three years to one hundred years with a mean of 43 years (std 21.36). The most common causes of traumatic subdural haematomas were falls and assault or violence (60%). Common causes were falls and assault or violence (60%). The increase in intracranial pressure in patients with subdural haematoma (SDH) causes herniation of brain tissue and a reduction in cerebral blood flow which usually are the cause of mortality. Mortality rates of 36-79% have been noted in patients with subdural haematoma (SDH) and the length of stay in the unit, length of hospital stay and Glasgow outcome scores (Jennett B and Bond M 1975, Koc RK et al 1997) at discharge were captured using a questionnaire. This data was entered into SPSS version 21 and analyzed. Discrete variables were compared using the chi square test while continuous data was analyzed using the Students’ T test. A p value < 0.05 was considered significant. Ethical approval was obtained from the institutions’ ethics review board.

3.0 Results.
Four hundred and forty five patients were admitted in the hospital with a diagnosis of head injury during the eleven month’s study period. Of those a total of sixty seven (67) patients were diagnosed on head CT Scan to have a subdural haematoma and were recruited into the study representing 15.05% of all patients with head injury. The hospital incidence of subdural haematomas was therefore more than six patients a month. The age ranged from three years to one hundred years with a mean of 43 years, median and mode of 35 years (Std 21.36) with half of the patients being of age between thirty and sixty three years. There were two peaks in age distribution; at 30-39 age group representing the youthful population who presented with acute subdural haematoma and another peak at 60-69 age groups consisting of mostly chronic subdural haematoma patients. Sixty four percent (n=43) of the patients had mild head injury, 19 patients (28%) had moderate head injury while five patients (7.5%) had severe head injury. At discharge fifty one patients (76.1%) recorded a good recovery, five (7.5%) had varying degrees of disability while eleven patients died (16.4%). There is an important co relationship between the post non surgical resuscitation Glasgow coma score at admission and poor outcome (p<0.001). Likewise a history of loss of consciousness (p=0.031) and the presence of other associated injury (p=0.038) predicted a poor outcome. Seventy two percent (n=48) of the patients were diagnosed at the level five facility while 28% were transferred from nearby hospitals. Of those a total of twenty eight percent (n=19) of the patients were diagnosed at the level five facility while 28% were transferred from nearby hospitals. Of those a total of twenty eight percent (n=19) of the patients were transferred into the facility in 5-25% of patients with severe head injury with a male:female ratio of 3:1. Although there has been tremendous improvement in the management of patients with subdural haematomas in this subset of patients were admitted with a diagnosis of head injury during the eleven month’s study period. Of those a total of sixty seven (67) patients were diagnosed on head CT Scan to have a subdural haematoma and were recruited into the study representing 15.05% of all patients with head injury. The hospital incidence of subdural haematomas was therefore more than six patients a month. The age ranged from three years to one hundred years with a mean of 43 years, median and mode of 35 years (Std 21.36) with half of the patients being of age between thirty and sixty three years. There were two peaks in age distribution; at 30-39 age group representing the youthful population who presented with acute subdural haematoma and another peak at 60-69 age groups consisting of mostly chronic subdural haematoma patients. Sixty four percent (n=43) of the patients had mild head injury, 19 patients (28%) had moderate head injury while five patients (7.5%) had severe head injury. At discharge fifty one patients (76.1%) recorded a good recovery, five (7.5%) had varying degrees of disability while eleven patients died (16.4%). There is an important co relationship between the post non surgical resuscitation Glasgow coma score at admission and poor outcome (p<0.001). Likewise a history of loss of consciousness (p=0.031) and the presence of other associated injury (p=0.038) predicted a poor outcome.

2.0 Methods
A prospective cross sectional descriptive study of patients diagnosed with subdural haematoma by CT scan conducted at the imparting surgical departments of Nakuru level five hospital between 1st January 2015 and 30th November 2015. All patients diagnosed to have subdural haematoma on CT scan were included. Descriptive patient demographic data, clinical presentation data, imaging investigations done, surgical treatments offered, intensive care admission and the length of stay in the unit, length of hospital stay and Glasgow outcome scores (Jennett B and Bond M 1975, Koc RK et al 1997) at discharge were captured using a questionnaire. This data was entered into SPSS version 21 and analyzed. Discrete variables were compared using the chi square test while continuous data was analyzed using the Students’ T test. A p value < 0.05 was considered significant. Ethical approval was obtained from the institutions’ ethics review board.

3.0 Results.
Four hundred and forty five patients were admitted in the hospital with a diagnosis of head injury during the eleven month’s study period. Of those a total of sixty seven (67) patients were diagnosed on head CT Scan to have a subdural haematoma and were recruited into the study representing 15.05% of all patients with head injury. The hospital incidence of subdural haematomas was therefore more than six patients a month. The age ranged from three years to one hundred years with a mean of 43 years, median and mode of 35 years (Std 21.36) with half of the patients being of age between thirty and sixty three years. There were two peaks in age distribution; at 30-39 age group representing the youthful population who presented with acute subdural haematoma and another peak at 60-69 age groups consisting of mostly chronic subdural haematoma patients. Sixty four percent (n=43) of the patients had mild head injury, 19 patients (28%) had moderate head injury while five patients (7.5%) had severe head injury. At discharge fifty one patients (76.1%) recorded a good recovery, five (7.5%) had varying degrees of disability while eleven patients died (16.4%). There is an important co relationship between the post non surgical resuscitation Glasgow coma score at admission and poor outcome (p<0.001). Likewise a history of loss of consciousness (p=0.031) and the presence of other associated injury (p=0.038) predicted a poor outcome.
The main cause of traumatic subdural haematoma in this subset of patients was falls and assault/ violence related each at 25.4%. Motorcycle accidents were responsible for 13.4% of the subdural haematomas, injuries to pedestrians 16.4%, motor vehicle accidents 4.5% of the total number of patients and in another 13.4% of the patients the cause could not be identified. (See Figure 2).

Sixty four percent (n=43) of the patients had mild head injury, 19 patients (28%) had moderate head injury while five patients (7.5%) had severe head injury.

Nine patients (13.4%) had presented with a convulsion. Thirty seven patients had lost consciousness at some time since injury representing 55.7% of all subdural haematoma patients attended to. The mean duration of loss of consciousness was 4.67 hours and a range of 0 hours to 48 hours (Std 10.5 hours). A history of loss of consciousness at any time predicted a poor outcome, (P=0.031). Ten patients (14.9%) presented with otorrhoea while four patients (6%) presented with rhinorrhoea. Eleven patients (16.4%) presented with a raccoon eye. Twenty six patients (38.8%) had a skull x ray done as their initial imaging investigation.

4.0 Discussion
Subdural haematoma is a common neurosurgical emergency reported to have an incidence of 5% to 25% of head injuries. Previous reports have discussed the significance of subdural haematoma in different populations and the factors that influence the outcome of this condition. In this study mortality from subdural haematoma has been found to be lower than expected in this series of patients. The overall mortality rate is 17% which is lower than other studies (Kiboi J.G et al 2010). Falls and assault comprised accounted for more than half the patients with acute subdural haematoma. More males suffer subdural haematomas as compared to females (m:f ratio 8.6:1) which is in keeping with the level of outdoor activities of men as compared to females in Kenya. This pattern of male involvement has been replicated in other studies (Kiboi J.G et al 2010). Falls and assault combined accounted for more than half the patients with acute subdural haematoma. This pattern was also seen at KNH ( Kiboi J.G et al 2010) and by Gennarelli (Gennarelli Ta and Thibault LE 1982) where he noted that 72% of their acute subdural haematoma patients were due to falls and assault as opposed to 24% who had the injury due to vehicular trauma. He explained from his experiments that the acceleration and deceleration forces from falls and assault are much higher than the forces that obtain in vehicular trauma. This thus explains the puzzle of why most SDH patients are injured from falls and assault as opposed to vehicular trauma even though vehicular trauma is more common. The mortality rate in subdural haematoma remains high. In this study the mortality rate is 16.4% and a functional recovery of 76.1% which compares with a mortality rate of 20.1% and a functional recovery of 45.6% that was recorded at KNH by Kiboi J.G. Mortality rate of 21.75% seen in China by Tian et al. (Kiboi J.G et al 2010, Tian H et al 2008). Elsewhere it has been reported that the mortality rate from acute subdural haematoma ranges from 36-79% (Kotwica Z, Brzezinski J 1993, Kyu-Hong Kim 2009). While it’s not abundantly clear why local studies seem to have lower mortalities, only 10.4% of the patients in this series had a brain contusion in addition to the acute subdural haematoma. This is in contrast in the acute subdural haematoma. This is in contrast to the other studies to that have quoted a higher associated brain contusion at 82% of such patients (Kotwica Z, Brzezinski J 1993). It is reported that the mortality rate in simple subdural haematoma is 20% but rises steeply to 60% in those with complex subdural haematomas. This fact may explain the lower associated mortality rate in this study. The cause of injury was as shown below.

Figure 2. A bar chart showing the causes of acute subdural haematoma.

Presence of otorrhoea
Yes 2 1 8 0.846
No 7 3 41

Presence of rhinorrhoea
Yes 10 2 25 0.031
No 1 3 26

History of loss of consciousness
Yes 1 1 2 0.313
No 5 2 8

Associated other injury
Yes 5 3 43 0.038
No 5 5 43

Associated brain contusion
Yes 2 0 5 0.528
No 9 5 45

Associated linear skull fracture
Yes 0 0 4 0.506
No 11 5 46

Associated depressed skull fracture
Yes 2 0 3 0.253
No 8 5 47

Intracerebral haematoma
Yes 0 0 1 0.850
No 11 5 49

Admitted to the ICU
Yes 1 0 0 0.079
No 10 5 50

Table 1. Showing outcome v/s the various patients’ characteristics.

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>Death (GOS 1)</th>
<th>Variable disability (GOS 2 and 3)</th>
<th>Good recovery (GOS 4 and 5)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male</td>
<td>10</td>
<td>4</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Age</td>
<td>&lt;30</td>
<td>2</td>
<td>1</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>31-60</td>
<td>5</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>&gt;61</td>
<td>4</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Transfer into hospital</td>
<td>Yes</td>
<td>6</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>5</td>
<td>5</td>
<td>24</td>
</tr>
<tr>
<td>GCS</td>
<td>Mild</td>
<td>2</td>
<td>4</td>
<td>37</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>5</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Severe</td>
<td>4</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Treatment offered</td>
<td>Burr holes</td>
<td>3</td>
<td>3</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Cranietomy</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Non surgical</td>
<td>8</td>
<td>2</td>
<td>18</td>
</tr>
<tr>
<td>Presence of convulsions</td>
<td>Yes</td>
<td>2</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>9</td>
<td>2</td>
<td>44</td>
</tr>
</tbody>
</table>

The subdural haematoma patient is mostly an adult male with a mean age of 43 years, median and mode of 35 years. The commonest causes of subdural haematoma are falls and assault/ violence related each at 25.4%, motorcycle accidents, injuries to pedestrians, motor vehicle accidents while in another 13.4% of the patients the cause could not be identified. A low post non surgical resuscitation...
Glasgow coma score influences a poor outcome. Likewise, a history of loss of consciousness and the presence of other associated injury predict a poor outcome in subdural haematoma patients.

6.0 Acknowledgements

May I acknowledge Florence A. Ngoya and Ruth E. Osso for their invaluable assistance and dedication in collection of the data analysed in this paper. I would also like to thank the Nakuru level five hospital and last but not least Egerton University division of research and extension for funding this project.

REFERENCES.