MAJOR TRAUMA IN HONG KONG
ELDERLY PATIENTS

Janice H H Yeung
PWH
Our team

- HAHO
  - Dr. Beatrice Cheng

- PWH
  - Prof. T H Rainer
  - Dr. N K Cheung
  - Dr. C Graham
  - Ms. J Yeung

- QEH
  - Dr. H F Ho
  - Ms. A. L M Chang

- QMH
  - Dr. W K Yuen
  - Ms. W Ho

- TMH
  - Dr. C W Kam
  - Ms. F L So
Background

- Trauma - fourth leading cause of death

- 12% population $\geq 65$ years

- Life expectancy in HK
  - Average 80 years
  - Male 78.5 years
  - Female 84.3 years
Aim of Study

The aim of this retrospective study was to analysis the characteristics of major trauma patients $\geq 55$ years in four HK trauma centers.
Methods

- 4 of 5 Hospital Authority trauma centers
  - Queen Elizabeth Hospital (QEH)
  - Queen Mary Hospital (QMH)
  - Prince of Wales Hospital (PWH)
  - Tuen Mun Hospital (TMH)

- 3 years study period
  - Jan 2002 to Dec 2004

- Trauma patient Age $\geq 55$ years
Methods - Data Collection

1. Accident & Emergency Department Clinical Information System (AEIS)

2. Trauma registry
   - Patients required trauma call activation
   - Trauma patients admitted to ICU
   - Trauma deaths
   - AED Cat 1 and Cat 2 patients
Presentation Plan

- Part 1 – Description of AEIS
- Part 2 – Description of Trauma Registry
Part 1 - Results from AEIS An Overall View on Elderly Trauma
Trauma Attendance in 4 Trauma Centers

- Overall ED Attendance 2,124,200
  - 17,700 per center/year

- Trauma cases 376,000 (18%)
  - age $\geq$ 55 years 80,800 (21%)
  - age $\geq$ 65 years 61,500 (16%)
Age distribution

<table>
<thead>
<tr>
<th>Years</th>
<th>No of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>55-59</td>
<td>8000</td>
</tr>
<tr>
<td>60-64</td>
<td>6000</td>
</tr>
<tr>
<td>65-69</td>
<td>4000</td>
</tr>
<tr>
<td>70-74</td>
<td>3000</td>
</tr>
<tr>
<td>75-79</td>
<td>4000</td>
</tr>
<tr>
<td>80-84</td>
<td>6000</td>
</tr>
<tr>
<td>85-90</td>
<td>2000</td>
</tr>
<tr>
<td>90 or above</td>
<td>1000</td>
</tr>
</tbody>
</table>

61% Female
Causes of Injuries

<table>
<thead>
<tr>
<th>Causes of Trauma</th>
<th>No. of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>40853</td>
</tr>
<tr>
<td>unclassified</td>
<td>25699</td>
</tr>
<tr>
<td>Industrial</td>
<td>6352</td>
</tr>
<tr>
<td>Traffic</td>
<td>3928</td>
</tr>
<tr>
<td>Assault</td>
<td>2409</td>
</tr>
<tr>
<td>Self-harm</td>
<td>869</td>
</tr>
</tbody>
</table>

51% of patients have domestic causes of injuries.
Triage Categories

- Critical: 854 patients (2%)
- Emergency: 965 patients (30%)
- Urgent: 23898 patients
- Semi-urgent: 53347 patients
- Non-urgent: 1763 patients
Destination of AED Elderly Trauma Patient

<table>
<thead>
<tr>
<th>Destination</th>
<th>No. of Patient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home</td>
<td>46244</td>
<td>57%</td>
</tr>
<tr>
<td>Admission</td>
<td>23799</td>
<td>29%</td>
</tr>
<tr>
<td>Refer</td>
<td>10175</td>
<td></td>
</tr>
<tr>
<td>Died</td>
<td>376</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>233</td>
<td></td>
</tr>
</tbody>
</table>

No. of Patient
Consulted Specialties

- Ortho, 46353, 58%
- Surgery, 16452, 20%
- Neuro, 9638, 12%
- Medical, 5671, 7%
- Others, 2713, 3%

- Ortho, 46353, 58%
- Surgery, 16452, 20%
- Neuro, 9638, 12%
- Medical, 5671, 7%
- Others, 2713, 3%
Part 2 - Results from Trauma Registry
Type and Severity of Injury

- 810 elderly trauma patients
  - Blunt 785 (97%)
  - Penetrating 24 (3%)
  - Male 470 (58%)
    - ISS > 15 266 (56%)
  - Female 340 (42%)
    - ISS > 15 168 (49%)
Injury causes and related Mortality

- Bicycle rider or passenger
- Burn or scalds
- Fall-high
- Fall-low
- Motor vehicle driver
- Motor vehicle passenger
- Motorcycle driver/pass...
- Pedestrian
- Penetrating injuries
- Others

No. of Patients

Mortality 26%

Female
Male
Abbreviated Injury Scale

No. of Patients

Area of Injuries

- Maximum (AIS 6)
- Critical (AIS 5)
- Severe (AIS 4)
- Serious (AIS 3)
- Moderate (AIS 2)
Intro- hospital care

- 379 (48%) comorbidity
- 354 (44%) ICU care
- 11 (38%) operation
- 270 (33%) convalescent hospital care
Length of Stay

Average LOS (day)

- NS
- Ortho
- CT
- GS
- Burns
- ICU
- Overall

Female
Male
<table>
<thead>
<tr>
<th>Age Group</th>
<th>ISS &lt;15 Mortality Rate</th>
<th>ISS &gt;15 Mortality Rate</th>
<th>Overall Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>55-64</td>
<td>4%</td>
<td>25%</td>
<td>14%</td>
</tr>
<tr>
<td>65-74</td>
<td>6%</td>
<td>32%</td>
<td>21%</td>
</tr>
<tr>
<td>75-84</td>
<td>5%</td>
<td>56%</td>
<td>34%</td>
</tr>
<tr>
<td>85-94</td>
<td>6%</td>
<td>58%</td>
<td>36%</td>
</tr>
<tr>
<td>95 or above</td>
<td>0%</td>
<td>50%</td>
<td>25%</td>
</tr>
<tr>
<td>Overall</td>
<td>6%</td>
<td>41%</td>
<td>24%</td>
</tr>
</tbody>
</table>
# Comorbidity and Mortality

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>ISS &lt;15</th>
<th>ISS &gt;15</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>2.1%</td>
<td>36.3%</td>
<td>20%</td>
</tr>
<tr>
<td>Yes</td>
<td>25.3%</td>
<td>40.8%</td>
<td>25.3%</td>
</tr>
<tr>
<td>P value</td>
<td>P &lt; 0.0001</td>
<td>P = 0.05</td>
<td>P = 0.077</td>
</tr>
</tbody>
</table>

20 unknown comorbidity cases were excluded
# Mortality on Isolated Injury

<table>
<thead>
<tr>
<th>Injury area</th>
<th>AIS 3</th>
<th>AIS 4</th>
<th>AIS 5</th>
<th>AIS 6</th>
<th>Overall</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head &amp; Neck</td>
<td>8.2%</td>
<td>17.8%</td>
<td>63.6%</td>
<td>100%</td>
<td>34.4%</td>
<td>P&lt;0.001</td>
</tr>
<tr>
<td>Face</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
<td>0%</td>
<td></td>
</tr>
<tr>
<td>Thorax</td>
<td>9.1%</td>
<td>0%</td>
<td>50%</td>
<td></td>
<td>7%</td>
<td>P=0.26</td>
</tr>
<tr>
<td>Abdomen</td>
<td>25%</td>
<td>0%</td>
<td></td>
<td></td>
<td>20%</td>
<td>P=0.429</td>
</tr>
<tr>
<td>Extremities</td>
<td>6.4%</td>
<td>0%</td>
<td>0%</td>
<td></td>
<td>6%</td>
<td>p=0.843</td>
</tr>
<tr>
<td>External</td>
<td>0%</td>
<td>0%</td>
<td>71.4%</td>
<td>75%</td>
<td>36.4%</td>
<td>P=0.006</td>
</tr>
</tbody>
</table>
## Logistic Model Coefficients for Mortality

<table>
<thead>
<tr>
<th>Factors</th>
<th>Coefficients</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.068</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>ED GCS</td>
<td>-0.271</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>ISS</td>
<td>0.085</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Conclusions on Elderly Trauma

- 21% ED trauma cases were elderly
- Major causes are MVCs and Falls
- Most common sites: Head and Limbs
- Mortality rate is 24%
- Age, ISS and ED GCS - best indicators on mortality
- Requires more hospital resources and rehabilitation
Thank you !!

Questions?