Employment of healthcare informatics system to enhance the cost-effectiveness in the management of the patients on ventilators

Dr. KW Lam
Queen Elizabeth Hospital
In 2002, a ventilator ward was established

Centralise the management of patients on ventilators in general wards

Provide specialised care to patients
- Invasive mechanical ventilation
- Non-invasive mechanical ventilation
Scope of services

• Multidisciplinary care
  – ICU specialists
  – Respiratory specialists
  – Nursing staff

• Standard weaning protocol

• Comfort care for end-of-life patients
Objectives of study

- To identify factors of successful weaning for patients on ventilators
- To improve the quality of care of patients
- To improve the cost-effectiveness
Methodology

- **Subjects**
  - Patients admitted to the ventilator ward

- **Period**
  - From 1 January 2005 to 31 December 2007
Methodology

- Data collected from CDARS
  - Demographic data
  - Diagnosis
  - Outcome
  - Risk factors

- Statistical method
  - Chi square test
Clinical Data Analysis and Reporting System

Login CDARS
Version 2008

User Name: [redacted]
Password: [redacted]

Clinical Data up to 15/04/2008 is available.
Request Submission is available from 06:00 to 23:00 every day.

Guidelines on Usage
- For the handling of research data that involves patient-identifying information, the researcher must comply with the Hong Kong Personal Data (Privacy) Ordinance.
- The use and access of data are governed under the Clinical Data Policy Manual of the Hospital Authority.
- It is a good practice to seek endorsement from relevant parties (e.g., Head of Department, COC) in the HA before disclosure and/or publication of research and study results, particularly when the data are not from your own department.

CDARS Data Disclaimer
- Data in CDARS are originally intended for HA internal and operational use. They are drawn from existing HA operational systems and the data quality may not be up to academic study level.
- The researcher of any study project, clinical audit or publication that employs clinical information taken from CDARS should ensure that the data accuracy and completeness fit the definition of the research protocol.

CDARS 2008 is here!
See the latest features of this release

How to use CDARS?
Get yourself familiar with CDARS 2007 via the new version of animation, featuring Out-Patient / Laboratory data analysis, and more.
Download Now...
Risk factors for analysis

- Age > 75 years
- Sex
- Cardiogenic shock
- Septic shock
- Myocardial infarction
- Chest infection
- Metastatic carcinoma
- DM
- COPD
- Chronic renal failure
- Liver failure
- Stroke
- Ischemic heart disease
A total of 2677 patients
  – 1271 patients survived
  – 1406 patients died

Average length of stay
  – Survived: 18.23 days
  – Died: 12.99 days
# Results

<table>
<thead>
<tr>
<th>Condition</th>
<th>Survived</th>
<th>Died</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &gt; 75</td>
<td>678</td>
<td>871</td>
<td>0.013</td>
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<tr>
<td>Cardiogenic shock</td>
<td>5</td>
<td>20</td>
<td>0.007</td>
</tr>
<tr>
<td>Septic shock</td>
<td>13</td>
<td>34</td>
<td>0.008</td>
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<tr>
<td>MI</td>
<td>118</td>
<td>178</td>
<td>0.015</td>
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<tr>
<td>Metastatic ca</td>
<td>4</td>
<td>16</td>
<td>0.016</td>
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<tr>
<td>Chest infection</td>
<td>335</td>
<td>578</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stroke</td>
<td>128</td>
<td>263</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
# Results

<table>
<thead>
<tr>
<th>Condition</th>
<th>Survived</th>
<th>Died</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>COPD</td>
<td>381</td>
<td>137</td>
<td>&lt;0.001</td>
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<tr>
<td>DM</td>
<td>73</td>
<td>51</td>
<td>0.008</td>
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<tr>
<td>Male</td>
<td>518</td>
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<tr>
<td>IHD</td>
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<td>145</td>
<td>0.266</td>
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Conclusion

- Multidisciplinary collaboration
  - Clinical vs IT

- Enhancement of services
  - Identify the factors of successful weaning by evidence based approach
  - Useful for selecting patients for intubation
  - Improve quality of care to patients
  - Improve the cost-effectiveness
Limitations

- Retrospective approach
- Completeness of data entry by doctors
Future Direction

- Standardization and optimization of clinical care based on local data of HA
- Adoption of such evidence based approach to other clinical services
Acknowledgement

• ICU
  – Dr. PK Chan
  – Dr. KF Hong
  – Dr. KY Lai
  – Dr. KW Au Yeung
  – Dr. F Cheng
Acknowledgement

- Respiratory team
  - Dr. WM Chan
  - Dr. CK Ng
  - Dr. S Lee
  - Dr. WH O
Acknowledgement

• Nursing staff of ventilator ward
  – Ms WH Law
  – Ms HM Wong
  – Ms LP Sit
  – Mr HW Luk
  – Other supporting nurses
Acknowledgement

- IT specialists of CDARS team
Thank you