Mission Impossible?
Reducing length of stay of COPD exacerbation
in an acute regional hospital

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- Coronary Heart Disease: -59%
- Stroke: -64%
- Other CVD: -35%
- COPD: +163%
- All Other Causes: -7%

Source: NHLBI/NIH/DHHS
Hong Kong - COPD

- Currently the 5th leading cause of death
- Occupies 9% of all medical bed days of HA

Imperative to reduce the burden of hospitalisation without incurring risks
Methods

• Descriptive study
• Review the strategies and programmes adopted primarily for reducing average LOS (aLOS) of COPD patients in UCH from 2000 – 2007
• Retrieval of data from Clinical Data Analysis & Reporting System (CDARS) of HA
  – aLOS
  – 28-day readmission
  – Mortality
• Compared with HA benchmarks
Results

7 programmes/strategies were developed during 2000 – 2007
1. Concentrating COPD patients to specialist beds
2. Mixed specialist-led and specialist-provided care
3. Promoting a ‘right-at-the-first-time’ culture
4. Enhancing collaboration with rehabilitation hospital
5. Pioneering a community COPD care programme
6. Pioneering a supported early discharge programme
7. Pioneering a home ventilation programme and an RCT of home ventilation for COPD patients
1. Concentrating COPD patients to specialist beds

Traditional model
- COPD patient as general patients
- Randomly assigned to be cared by general or other specialist physicians
- Adv: more doctors have exposure to COPD patients
- Disadv: may not be up to date on current international guideline; difficult to develop programme or conduct trials; difficult to innovate novel strategies

Designated COPD beds
- Under specialist care
- Defined accountability w.r.t. key performance indicators
- Adv: conducive to guideline adherence and innovation
- Disadv: seen to be expanding territory; limited by resource/manpower (16 beds in UCH)
2. Mixed specialist-led and specialist-provided care

**Traditional model**
- Patient attended by general trainees
- ‘Second-round’/Supervised by general physician

**UCH pilot**
- COPD patients seen by trainee and respiratory specialist as a team
- BOTH do first round on patients with hand-over of cases
- Adv: specialist has first hand information on patient to decide most cost-effective care
- Disadv: ? ↓ training (quite the contrary); staff sentiment (generally embracing)
3. Right-at-the-first-time culture

Right people, right place, first time
- Ward round – time saving
- Rapid and accurate
  - Diagnosis (COPD symptom mimicked by many other diseases)
  - Assessment
  - Treatment
  - Triage
- Examples of wrong diagnosis
  - CHF
  - PE
  - Overlap syndrome
  - Pneumoconiosis
  - Neuromuscular disease
4. Enhanced collaboration with rehabilitation hospital

<table>
<thead>
<tr>
<th>Traditional</th>
<th>UCH/HOHH</th>
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<tbody>
<tr>
<td>• Patients randomly distributed in various ward</td>
<td>• Regular meeting</td>
</tr>
<tr>
<td>• Most patients put on waiting list to rehabilitation unit – long wait</td>
<td>• Easy to feedback</td>
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<tr>
<td>• Nobody is accountable</td>
<td>• Well defined accountability</td>
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<tr>
<td>• Nobody is doing triage</td>
<td>• Most COPD patients can be triaged by respiratory specialists</td>
</tr>
<tr>
<td>• Potential wastage</td>
<td>– Too well – can be discharged</td>
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<tr>
<td></td>
<td>– Too sick – keep in acute hospital</td>
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<tr>
<td></td>
<td>Avoid transfer of patients with</td>
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<td></td>
<td>– No motivation to rehabilitation</td>
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<td></td>
<td>– Assessed to have poor rehabilitation potential</td>
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<td></td>
<td>• Arranging alternative care plan</td>
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<td>– e.g. placement, etc.</td>
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<td>• Shortening of waitlist and reduce wastage, rational use of rehabilitation bed</td>
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5. Pioneering a community COPD care programme

Community Pulmonary Care Programme (CPCP)

- CNS led
- Home visit + attending rehabilitation class
  - Drug supervision
  - Use of medical equipments
  - Physical exercise in community centre
  - Enhancing informal support network
  - Morale boosting
6. Pioneering an early supported discharge programme

Daily Home Visit

Treatment Supervision
- Antibiotic
- Steroid
- Nebulised bronchodilator

Stable

Unresolved

Usual care

CNS support 1 week

Respiratory clinic 1 week

Fu respiratory clinic in 1 week

Unstable

Office hour

Contact Resp. Doctor

Further Treatment

Direct Admission

Non-Office hour

AED

Contact Resp. Doctor

aLOS = 2.9 days (HA 4.5-5.3)

HA convention 2004
7. Pioneering a home ventilation programme for respiratory failure

- End stage COPD patients prone to recurrent episodes of respiratory failure requiring admission and ICU care
- UCH is one of the major providers of home ventilation in HK, the only HA hospital listed on international directory (http://www.ventusers.org/net/VentDIR.pdf)
- Conducting an RCT on home ventilation for COPD (www.clinicaltrials.gov [NCT00429156])

![Graph showing proportion developing recurrent AHRF over time with treatment groups: Home NIV, Home NIV-censored, Sham, Sham-censored. Log Rank test p = 0.019. 180 days: Sham 53% vs NIV 18%)]
Results (1)

UCH aLOS for COPD:
From 4.9 to 3.2 days
(Trend, p < 0.001)

HA benchmark:
From 5.5 to 4.7 days
(Difference, p = 0.012)
Results (2)

• UCH COPD mortality (1.1 ± 0.3%) significantly lower than HA benchmark (2.1 ± 0.4%) (p < 0.001)
• No significant increase in transfer to rehabilitation hospital
• No significant increase in aLOS in rehabilitation hospital
• No significant increase in 28-day readmission rate
Paradigm shift

Reduce COPD readmission
- One-dimensional
- May perhaps help to improve care in a general medical practice at the very beginning
- Not in a specialist practice with optimal care in place
- May generate unnecessary demand – the best way to reduce readmission is not to discharge the patient!
- Unrealistic-COPD exacerbation often not predictable, seldom preventable – air pollution, flu

Reduce avoidable hospitalisation
- More challenging
- Multi-dimensional approach and evaluation
  - Prevent admission
  - Optimal in-patient care
  - Post-discharge care
- Involve conscious and calculated risk taking
  - e.g. early supported discharge
- More community involvement, multi-disciplinary collaboration and patient empowerment
- Realistic - Acknowledges the inevitability of COPD exacerbation, yet reduces the overall cost of treatment without compromising results

Mission impossible
- Unrealistic
- May generate unnecessary demand

Mission possible
- Realistic and practical
- Demand innovative strategies
Conclusion

- A multi-pronged approach in acute regional hospital may reduce aLOS in COPD exacerbations without a significant increase in risk
- A paradigm shift promoting reduction in avoidable hospitalization underpins various innovations to achieve this ends
Future directions

• 1 ward for COPD and NIV beds
• Telemedicine and first aid treatment at community center
• Enhanced triage at AED
• Enhancing supported discharge to include O2-dependent pt.
• Interface with ambulatory care centre
• Designated COPD clinic
• Build a patient registry

Support needed:
1. Manpower (Doctors, Specialist Nurses, CNS)
2. IT
3. Equipment e.g. O2 concentrator
4. Community support – especially on patient’s expectations