Self management plan in chronic obstructive pulmonary disease (COPD) – success in preventing preventables

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Chronic obstructive pulmonary disease (COPD) imposes great burden on local acute medical services.

- Major cause of morbidity
- Third leading cause of death in 2020, WHO
Disease management consists of a group of coherent interventions designed to prevent or manage one or more chronic conditions using a systematic, multidisciplinary approach and potentially employing multiple treatment modalities. The goal of chronic disease management is to identify persons at risk for one or more chronic conditions, to promote self-management by patients and to address the illness or conditions with maximum clinical outcome, effectiveness and efficiency regardless of treatment settings or typical reimbursement patterns.

Schrijvers 2009
Background

* Through educating health behavior and patient empowerment on disease control, self-management interventions improve clinical outcomes of chronic diseases eg DM, CHF

* Several systemic reviews have been published and all suggested some beneficial effect on health status of a disease management intervention in COPD patients. Firm conclusion pending

* Cochrane Airway group in 2011 systemic review protocol:
  * health related quality of life
  * Functional exercise capacity
  * Exacerbations
Objective

To study the impact of self management plan and fast track clinic on utilization of acute medical services in COPD patients.
Study population:
This prospective cohort study comprised of COPD patients recruited into a home-based pulmonary rehabilitation (PR) program with integrated self-management plan. Only patients with at least one year follow-up data were included.

Outcome variables:
AED utilization
Hospital admission
Quality of life
Exercise Capacity
COPD management plan

* Pharmacologic therapies
* Oxygen therapy and Ventilatory support
* Rehabilitation
* Self management program
  * Education on disease and symptom management
  * Action plan for exacerbation
  * Rescue Medications
* Telephone hotlines
* Fasttrack clinic
Self management program(1)

* Education:
  * Knowledge about their disease
  * Symptoms awareness
  * Dyspnea management, cough/breathing technique, daily self care, nutrition
  * Concerns regarding adverse effect of medications, inhalation technique
  * Patient brochures
Self management program (1)

- Action Plan for COPD exacerbation (AE)
  - Triggering factors
  - Monitoring of symptoms and recognition COPD AE
  - Action plan to treat COPD AE
  - A week course of rescue medications (an antibiotic and an oral steroid) was given for proactive management of COPD exacerbation with infective symptoms (defined as at least 2 of the following 3 symptoms changes of dyspnea, sputum or sputum purulence for 24 hours)
Self management plan(2)

* Rehabilitation
  * Tailor-made exercise training
  * Home modification to facilitate COPD patients to stay in community with healthy lifestyles.
  * Home visits to reinforce exercise training at home
  * Provision of equipments
Telephone hotlines: PR personnel provided their hospital DECT phone numbers to patients for 24 hours support without asking for extra pay.
Fast-track follow-ups (within one week) in ambulatory day center to review new symptoms early or to replenish medications.

- No pressure, no devaluation
Forty-three patients joined the program but five patients were excluded for complete illiteracy and lack of caregivers. Results were based on one year data in comparison to the pre-recruitment value.
M=32, F=6
Age 74.3 +/- 6.2

Mean FEV1 = 0.94 +/- 0.3 L
Mean %FEV1 predicted = 46.3% +/- 15.3%
Impact on utilization of acute service

- COPD AE in 1 year ↓
  - Preprogram: 187 episodes, 4.92 per patient/yr
  - Postprogram: 130 episodes, 3.42 per patient/yr

- AED attendance over 1 year ↓
  - Preprogram: 102 attendance, 2.68 per patient/yr
  - Postprogram: 27 attendance, 0.71 per patient/yr

- Hospital admission ↓
  - Preprogram: 98 admissions, 2.58 per patient/yr
  - Postprogram: 26 admissions, 0.68 per patient/yr
Distribution plots of hospital admission and AED attendance

There were significant reduction in hospital admission (mean 2.58 vs 0.68, p<0.001) and AED attendance (mean 2.68 vs 0.71, p<0.001).
Over half of the COPD AE (54%) resulted in hospital admission before intervention at baseline. After adoption of self management plan, only 20% of the COPD AE required hospitalization. (61.8% reduction in the probability of hospitalization for COPDAE).
Initiation of antibiotic/steroid therapy for COPD exacerbation according to action plans were adopted by 83.8% of patients.

Totally 80 courses of rescue medications

Most COPD exacerbations (86.25%) were settled by the rescue medication and self management strategy. Only 13.75% of these failed to respond to the antibiotic/steroid therapy.
Health related QOL as measured by SGRQ showed significant improvement in symptoms, impact and total scores.
### Results

* Six minute walk distance (6MWD)*  

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<th>Baseline</th>
<th>6 months</th>
<th>Change</th>
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<tr>
<td>6 MWD (meter)</td>
<td>265.71 ±80.29</td>
<td>319.08 ±79.93</td>
<td>53.37m</td>
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There were 42 phone calls to our hotline for advice.

Fast track follow-up assessments were arranged for 25 patient-attendances and 96% of them had their problems settled as outpatient, leaving one clinical admission (4%) for pneumonia.

No midnight call has been received

No unreasonable fast-track clinic attendance
Discussion: Prevention is better than cure

* First get patient and family involved.
* Enroll COPD patients into a pulmonary rehabilitation program
  * Reduce barrier for exercises at home
  * home visits
  * tailor made home based exercise program
* Reinforce self management strategy
  * Symptom control strategy
  * Early recognition of COPD AE
  * Action plan: prompt initiation of therapy
Discussion: Prevention is better than cure

- Build up confidence: frequent follow-up under specialists care, thorough check-up of lung function and clinical symptoms
- Reassure: the possibility to start treatment early, not having to call a doctor, clear written instruction and total autonomy
- Reduce uncertainty: low barrier to seek help, easy access to health care workers who knew them well
Self management plan was highly effective in preventing hospital admissions and reducing the burden of COPD patients on acute medical services.
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* Thank you very much
Limitations of the study

* There were no data for admission to private hospitals – one patient admitted to a private hospital for DM control.
* The number of episodes of COPD exacerbation were recalled by patients during each follow-up visit may not be accurate.
* The number of episodes of COPD exacerbation in the past one year prior to recruitment recalled by patient may not be accurate.