Storia naturale delle scelte terapeutiche della BPCO

www.fisiokinesiterapia.biz
Chronic obstructive pulmonary disease (COPD) is a disease state characterized by airflow limitation that is not fully reversible. The airflow limitation is usually both progressive and associated with an abnormal inflammatory response of the lungs to noxious particles or gases.
The vicious circle of COPD

- COPD
- Dyspnea
  - Physical activity
    - Shortness of breath
  - Pre-agonic symptoms
    - Depressing levels of fitness
  - Depression
    - Social isolation
      - Social activity
While smokers who are unable or unwilling to quit may derive limited benefit from partial smoking reduction, complete smoking cessation remains a necessity for those wanting to minimise all of the harmful effects of smoking.
### Therapy at Each Stage of COPD

**Figure 6 - Therapy at Each Stage of COPD**

<table>
<thead>
<tr>
<th>Old</th>
<th>0: At Risk</th>
<th>I: Mild</th>
<th>II: Moderate</th>
<th>III: Severe</th>
<th>IV: Very Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>0: At Risk</td>
<td>I: Mild</td>
<td>II: Moderate</td>
<td>III: Severe</td>
<td>IV: Very Severe</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>IIA</td>
<td>IIB</td>
<td></td>
</tr>
</tbody>
</table>
| **Characteristics** | • Chronic symptoms  
                        • Exposure to risk factors  
                        • Normal spirometry | • FEV₁/FVC < 70%  
                        • FEV₁ ≥ 80%  
                        • With or without symptoms | • FEV₁/FVC < 70%  
                        • 50% > FEV₁ < 80%  
                        • With or without symptoms | • FEV₁/FVC < 70%  
                        • 30% > FEV₁ < 50%  
                        • With or without symptoms | • FEV₁/FVC < 70%  
                        • FEV₁ < 30% or presence of chronic respiratory failure or right heart failure |
| **Avoidance of risk factor(s); influenza vaccination** | Add short-acting bronchodilator when needed |
| | Add regular treatment with one or more long-acting bronchodilators  
Add rehabilitation |
| | Add inhaled glucocorticosteroids if repeated exacerbations |
| | Add long-term oxygen if chronic respiratory failure  
Consider surgical treatments |
Fattori correlati alla ridotta sopravvivenza
Dyspnea Is a Better Predictor of 5-Year Survival Than Airway Obstruction in Patients With COPD

Koichi Nishimura, MD; Takateru Izumi, MD, FCCP; Mitsuhiro Tsukino, MD; and Toru Oga, MD; on behalf of the Kansai COPD Registry and Research Group in Japan

**Figure 1.** Five-year survival according to the staging of disease severity as defined by the ATS guideline evaluated by the percentage of predicted FEV₁.

**Figure 2.** Five-year survival according to the level of dyspnea as evaluated by the modified 5-point grading system of Fletcher et al.¹⁰
Four predictors of survival in COPD.
Connors et al., AJRCCM 1996; 154: 959-967

- APACHE score
  - <25
  - 25-40
  - >40

- Body Mass Index (kg/m²)
  - >22
  - 18-22
  - <18

- Activities Daily Living
  - 0
  - 1 or 2
  - >2

- Age (years)
  - <60
  - 60-75
  - >75

Cumulative Proportion Surviving vs. Follow up time, Days
The Body-Mass Index, Airflow Obstruction, Dyspnea, and Exercise Capacity Index in Chronic Obstructive Pulmonary Disease

Bartolome R. Celi, M.D., Claudia G. Cote, M.D., Jose M. Marin, M.D., Ciro Casanova, M.D., Maria Montes de Oca, M.D., Reina A. Mendez, M.D., Victor Pinto Plata, M.D., and Howard J. Cabral, Ph.D.

Characteristics of Physical Activities in Daily Life in Chronic Obstructive Pulmonary Disease

Fabio Pitta, Thierry Troosters, Martijn A. Spruit, Vanessa S. Probst, Marc Decramer, and Rik Gosselink

<table>
<thead>
<tr>
<th>TABLE 3. CHARACTERISTICS OF PHYSICAL ACTIVITIES IN DAILY LIFE IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND HEALTHY ELDERLY SUBJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with COPD (n = 50)</td>
</tr>
<tr>
<td>Walking time, min</td>
</tr>
<tr>
<td>Cycling time, min</td>
</tr>
<tr>
<td>Standing time, min</td>
</tr>
<tr>
<td>Sitting time, min</td>
</tr>
<tr>
<td>Lying time, min</td>
</tr>
<tr>
<td>Movement intensity during walking, m/s²</td>
</tr>
</tbody>
</table>

Am J Respir Crit Care Med Vol 171. pp 972–977, 2005
Objectives of COPD Management

- Prevent disease progression
- Relieve symptoms
- Improve exercise tolerance
- Improve health status
- Prevent and treat exacerbations
- Prevent and treat complications
- Reduce mortality
- Minimize side effects from treatment
Patients with frequent exacerbations are more likely to become housebound and need targeting in rehabilitation programs.

Figure 3. Longitudinal changes in SGRQ total and component scores,
**Tolleranza allo sforzo**

Distanza percorsa nel 6MWD  
_Hui KP, Hewitt AB (Chest 2003; 124: 94-7)_

Carico massimo raggiunto su treadmill  
_Ries Al et Al. (AJCCM 2003; 167: 880-8)_

**Dispnea**

Bauldoff GF et Al.  
_(Chest 2002; 122: 948-54)_

**Affaticabilità dei muscoli scheletrici**

_M.J.Mador AJRCCM 2001; 163: 930-5)_
Quality of Life
(Short-Form 36)
Williams JEA et Al. (Thorax 2003; 58: 515-8)

Qualità di Benessere
LONG-TERM OXYGEN THERAPY

Stephen P. Tarpy, M.D.,
and Bartolome R. Celli, M.D.

contribute to chronic malnutrition in patients with severe obstructive pulmonary disease."

Effects of Long-Term Oxygen Therapy

In patients with hypoxemia, oxygen supplementation improves survival, pulmonary hemodynamics, exercise capacity, and neuropsychological performance. It may also decrease the oxygen cost of breathing and improve the quality of sleep.

Survival

Thorax 1996; 51:44
Sopravvivenza dei pazienti con BPCO
La piaga delle riacutizzazioni
Acute Exacerbation of COPD* 
Factors Associated With Poor Treatment Outcome

Naresh A. Dewan, MBBS, FCCP; Salem Rafique, MD; Badar Kanwar, MD; Hemant Satpathy, MD; Kay Ryschon, MS; Glenn S. Tilletson, MS; and Michael S. Niederman, MD, FCCP

(CHEST 2000; 117:662–671)
Host factors that associated with treatment failure:

- FEV1 < 35% (46.4% vs 22.4%; p < 0.047),
- home oxygen (60.7% vs 15.6%; p < 0.0001),
- Frequency of exacerbation (3.6+/−2.0 vs 1.6+/−0.91; p < 0.001),
- history of previous pneumonia (64.3% vs 35.1 p < 0.007),
- history of sinusitis (28.6% vs 8.8%; p < 0.009) and
- use of maintenance steroids (32.1% vs 15.2% p < 0.052).

Table 4—Odds of Failure in Relation to Home Oxygen Therapy and Number of Exacerbations Over 24 Months*

<table>
<thead>
<tr>
<th>Variables</th>
<th>Odds of Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home oxygen and one exacerbation</td>
<td>0.311</td>
</tr>
<tr>
<td>Home oxygen and two exacerbations</td>
<td>1.008</td>
</tr>
<tr>
<td>Home oxygen and three exacerbations</td>
<td>3.274</td>
</tr>
<tr>
<td>Home oxygen and four exacerbations</td>
<td>10.627</td>
</tr>
<tr>
<td>Home oxygen and five exacerbations</td>
<td>34.707</td>
</tr>
</tbody>
</table>
A total of 86 cases and 86 control subjects were included, (FEV1 39% prd)

Multivariate logistic regression showed the following risk (or protective) factors of COPD hospitalization:

- three or more COPD admissions in the previous year (odds ratio [OR] 6.21, p<0.008);
- FEV1 (OR 0.96 per percentual unit, p<0.0005);
- underprescription of long-term oxygen therapy (LTOT) (OR 22.64, p<0.007);
- and current smoking (OR 0.30, p<0.022).
One-year survival for 1016 COPD with acute exacerbation

Follow-up Time, Days

Proportion surviving

N = 1016

Connors, AJRCCM 1998
Time Course and Recovery of Exacerbations in Patients with Chronic Obstructive Pulmonary Disease

TERENCE A. R. SEEMUNGAL, GAVIN C. DONALDSON, ANGSHU BHOWMIK, DONALD J. JEFFRIES, and JADWIGA A. WEDZICA

TABLE 3

<table>
<thead>
<tr>
<th></th>
<th>PEFR (IQR)</th>
<th>Symptoms (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median time to recovery, d*</td>
<td>6 (1 to 14)</td>
<td>7 (4 to 14)</td>
</tr>
<tr>
<td>% Exacerbations recovering within 35 d</td>
<td>75.2</td>
<td>86.1</td>
</tr>
<tr>
<td>% Exacerbations recovering within 91 d</td>
<td>80.2</td>
<td>90.9</td>
</tr>
<tr>
<td>% Exacerbations in which the next exacerbation occurs before complete recovery in PEFR</td>
<td>3.4</td>
<td>1.4</td>
</tr>
<tr>
<td>% Exacerbations with indeterminate recovery†</td>
<td>9.3</td>
<td>3.1</td>
</tr>
<tr>
<td>% Exacerbations that do not recover at 91 d</td>
<td>7.1</td>
<td>4.6</td>
</tr>
</tbody>
</table>
Time course of pulmonary function before admission into ICU. 
A two-year retrospective study of COLD patients with hypercapnia

M Vitacca, K Foglio, S Scalvini, S Marangoni, A Quadri and N Ambrosino

Controlled study: 
Time course of 2 years before admission in ICU 
for 16 pts vs 15 controls.

The results indicated that:

Basal body weight, 
Rate of deterioration over time in:
  • FEV1 
  • VC, 
  • blood gas values, 
  • bicarbonates, 
  • RVD

may be related to the necessity of ICU admission in COLD patients 
with hypercapnic respiratory insufficiency.
Documento

Raccomandazioni per la ventilazione meccanica Domiciliare. Aggiornamento anno 2003. Parte 1

AIPO, GRUPPO DI STUDIO RIABILITAZIONE LUCIANO PESCE

Vol 18/5 2003 368-375
Indicazione di trattamento elettiva:
paz. senza sufficienti garanzie di autonomia ventilatoria

La VMN come strumento di protezione sulle riacutizzazioni severe che necessitano di ospedalizzazione?
PERCENT SURVIVAL

- PP (41)
- MYO (13)
- KS (53)
- TB (55)
- COPD (50)
- BRO (10)

ABGs

Clini E et al 2002

PaCO₂ on air (mmHg)

PaCO₂ on oxygen (mmHg)

PaO₂ on air (mmHg)

PaO₂ on oxygen (mmHg)

* p=0.010

* p=0.009
Survival curve

Survival

Survival

0 100 200 300 400 500 600 700

days

Survival

0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00

Clini E et al 2002
CLINICAL OUTCOME
Comparison of hospital admissions

Days spent in hospital

Change (days/pt/year)

OLT
OLT+PSV

Number of hospital stay

Change (nr/pt/year)

OLT
OLT+PSV

Clini E et al 2002
La ventilazione non invasiva nel trattamento della IRA su IRC: una rivoluzione epidemiologica
**RESPONSE TO MEDICAL THERAPY in COPD RELAPSE**

<table>
<thead>
<tr>
<th>% of Intubation</th>
<th>&lt; 7.20</th>
<th>7.21-7.25</th>
<th>7.26-7.30</th>
<th>7.31-7.35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to nor.h</td>
<td>69±60</td>
<td>36±29</td>
<td>31±24</td>
<td>30±18</td>
</tr>
<tr>
<td>Death, %</td>
<td>50</td>
<td>20</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Time EI</td>
<td>2±2</td>
<td>5±4</td>
<td>8±10</td>
<td>13±18</td>
</tr>
<tr>
<td>Death %</td>
<td>21</td>
<td>6</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

NMV has a role?
Acute exacerbations in patients with COPD: predictors of need for mechanical ventilation

M. Vitacca, E. Clini, R. Porta, K. Foglio, N. Ambrosino

Failure = (NPI × 0.21) + (FVC% × 0.14) - 8.28.

Success = (NPI × 0.11) + (FVC% × 0.20) - 7.53.

ERJ 1996; 9:1487-1493
Endotracheal Tube vs Mask
(Complimentary or alternative role?)

Modified by U. Meduri
The YONIV Trial for COPD

**Inclusion criteria**
- On arrival on ward
  - RR > 23 bpm
  - pH 7.30-7.35
  - PaCO$_2$ > 6 kPa

**Exclusion criteria**
- Patients requiring immediate ETI
  - pH < 7.20
  - 7.2 < pH < 7.25 on two occasions (1 hour)
  - GCS < 8 and PaCO$_2$ > 8 kPa
  - PaO$_2$ < 6 kPa despite max tolerated FiO$_2$
  - Cardiorespiratory arrest

Plant Lancet 2000
YONIV Study in GW
outcome by enrollment pH

Plant Lancet 2000
# NIV for acute exacerbations of COPD in ICU

## OUTCOMES

<table>
<thead>
<tr>
<th></th>
<th>NIV (43)</th>
<th>M.T. (42)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endotr. intubation, n (%)</td>
<td>11 (26)</td>
<td>31 (74)</td>
</tr>
<tr>
<td>Hospital stay, days</td>
<td>23±17</td>
<td>35±33</td>
</tr>
<tr>
<td>In-hospital mortality, n (%)</td>
<td>4 (9)</td>
<td>12 (29)</td>
</tr>
<tr>
<td>Complications, %</td>
<td>16</td>
<td>48</td>
</tr>
</tbody>
</table>

* = NIV significantly different from M.T.

(from Brochard L. et al. NEJM 1995;333:817-822)
<table>
<thead>
<tr>
<th></th>
<th>NMV</th>
<th>MT</th>
</tr>
</thead>
<tbody>
<tr>
<td>No ET</td>
<td>100%</td>
<td>45%</td>
</tr>
<tr>
<td>MV, h</td>
<td>69±36</td>
<td>220±281</td>
</tr>
<tr>
<td>H mortality</td>
<td>8%</td>
<td>18%</td>
</tr>
<tr>
<td>2-mo mortality</td>
<td>11%</td>
<td>62%</td>
</tr>
</tbody>
</table>

Confalonieri  Am J Respir. Crit. Care Med 1999
Non-invasive positive pressure ventilation to treat respiratory failure resulting from exacerbations of chronic obstructive pulmonary disease: Cochrane systematic review and meta-analysis

Josephine V Lightowler, Jadwiga A Wedzicha, Mark W Elliott, Felix S F Ram

<table>
<thead>
<tr>
<th>Study</th>
<th>NPPV</th>
<th>Usual medical care</th>
<th>Risk ratio (fixed 95% CI)</th>
<th>Weight (%)</th>
<th>Risk ratio (fixed 95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avdeev et al 1998</td>
<td>7/29</td>
<td>12/29</td>
<td></td>
<td>11.2</td>
<td>0.58 (0.27 to 1.27)</td>
</tr>
<tr>
<td>Barbe et al 1996</td>
<td>4/14</td>
<td>0/10</td>
<td></td>
<td>0.5</td>
<td>6.60 (0.39 to 110.32)</td>
</tr>
<tr>
<td>Bott et al 1993</td>
<td>5/30</td>
<td>13/30</td>
<td></td>
<td>12.1</td>
<td>0.38 (0.16 to 0.94)</td>
</tr>
<tr>
<td>Brochard et al 1995</td>
<td>12/43</td>
<td>33/42</td>
<td></td>
<td>31.1</td>
<td>0.36 (0.21 to 0.59)</td>
</tr>
<tr>
<td>Celikel et al 1998</td>
<td>1/15</td>
<td>6/15</td>
<td></td>
<td>5.6</td>
<td>0.17 (0.02 to 1.22)</td>
</tr>
<tr>
<td>Dikensoy et al 2002</td>
<td>4/19</td>
<td>7/17</td>
<td></td>
<td>6.9</td>
<td>0.51 (0.18 to 1.45)</td>
</tr>
<tr>
<td>Plant et al 2000</td>
<td>22/118</td>
<td>35/118</td>
<td></td>
<td>32.6</td>
<td>0.63 (0.39 to 1.00)</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td><strong>55/268</strong></td>
<td><strong>106/261</strong></td>
<td></td>
<td><strong>100</strong></td>
<td>0.51 (0.38 to 0.67)</td>
</tr>
</tbody>
</table>

Test for heterogeneity: $\chi^2 = 7.59$, df=6, $P=0.27$
Test for overall effect: $Z=4.82$, $P<0.0001$

**Fig 2** Risk of treatment failure (mortality, need for intubation, and intolerance) in seven studies of non-invasive positive pressure ventilation (NPPV) as an adjunct to usual medical care.
Predictors of failure in hypercapnic pts

Early failures
- Gas exchange: 49%
- Dyspnea: 16%
- Secretions: 13%
- Intolerance: 6%
- Hemodynamic: 10%
- Others: 6%

Late failures
- Gas exchange: 34%
- Dyspnea: 13%
- Secretions: 13%
- Intolerance: 0%
- Hemodynamic: 7%
- Others: 33%

from Meduri et al. CHEST / 109 / 1 / JANUARY, 1996 179
Predictors of failure in hypoxemic ARF

from Antonelli M. et al. ICM 2001;27: 1718-1728)
A chart of failure risk for noninvasive ventilation in patients with COPD exacerbation

M. Confalonieri*, G. Garuti*, M.S. Cattaruzza*, J.F. Osborn†, M. Antonelli*, G. Conti*, M. Kodric*, O. Resta*, S. Marchese*, C. Gregoretti* and A. Rossi, on behalf of the Italian noninvasive positive pressure ventilation (NPPV) study group*

Risk stratification of NPPV failure was assessed in 1,033 consecutive patients admitted to experienced hospital units, including two intensive care units, six respiratory intermediate care units, and five general wards. NPPV was successful in 797 patients.

<table>
<thead>
<tr>
<th>pH admission &lt; 7.25</th>
<th>pH admission 7.25 - 7.29</th>
<th>pH admission &gt; 7.30</th>
</tr>
</thead>
<tbody>
<tr>
<td>RR</td>
<td>APACHE ≥ 29</td>
<td>APACHE &lt; 29</td>
</tr>
<tr>
<td>GCS 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30</td>
<td>29</td>
<td>11</td>
</tr>
<tr>
<td>30-34</td>
<td>42</td>
<td>10</td>
</tr>
<tr>
<td>≥ 35</td>
<td>52</td>
<td>24</td>
</tr>
<tr>
<td>GCS 12-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30</td>
<td>48</td>
<td>22</td>
</tr>
<tr>
<td>30-34</td>
<td>63</td>
<td>34</td>
</tr>
<tr>
<td>≥ 35</td>
<td>71</td>
<td>42</td>
</tr>
<tr>
<td>GCS &lt; 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30</td>
<td>84</td>
<td>35</td>
</tr>
<tr>
<td>30-34</td>
<td>76</td>
<td>49</td>
</tr>
<tr>
<td>≥ 35</td>
<td>82</td>
<td>59</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>pH after 2 h &lt; 7.25</th>
<th>pH after 2 h 7.25 - 7.29</th>
<th>pH after 2 h &gt; 7.30</th>
</tr>
</thead>
<tbody>
<tr>
<td>RR</td>
<td>APACHE ≥ 29</td>
<td>APACHE &lt; 29</td>
</tr>
<tr>
<td>GCS 15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30</td>
<td>72</td>
<td>35</td>
</tr>
<tr>
<td>30-34</td>
<td>86</td>
<td>59</td>
</tr>
<tr>
<td>≥ 35</td>
<td>93</td>
<td>73</td>
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<td>GCS 12-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 30</td>
<td>84</td>
<td>51</td>
</tr>
<tr>
<td>30-34</td>
<td>93</td>
<td>74</td>
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<td>96</td>
<td>84</td>
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<tr>
<td>GCS &lt; 11</td>
<td></td>
<td></td>
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<tr>
<td>&lt; 30</td>
<td>93</td>
<td>74</td>
</tr>
<tr>
<td>30-34</td>
<td>97</td>
<td>88</td>
</tr>
<tr>
<td>≥ 35</td>
<td>99</td>
<td>93</td>
</tr>
</tbody>
</table>
NIV failure:

20-25% in COPD
8-70% in ARF

where EI ?
ICU transfert ?
ethic decisions
Physiological Response to Pressure Support Ventilation Delivered before and after Extubation in Patients Not Capable of Totally Spontaneous Autonomous Breathing

MICHELE VITACCA, NICOLINO AMBROSINO, ENRICO CLINI, ROBERTO PORTA, CIRO RAMPULLA, BARBARA LANINI, and STEFANO NAVA

PTPdi/min (cmH20 x s/min)

ij-PSV n-PSV T-piece S.B.

AJRCCM 164:638-42, 2001
### OUTCOMES

<table>
<thead>
<tr>
<th></th>
<th>N-PSV</th>
<th>I-PSV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration of MV, days @</td>
<td>10.2 (6.8)</td>
<td>6 (11.8)</td>
</tr>
<tr>
<td>Time in ICU, days @</td>
<td>15.1 (5.4)</td>
<td>24.0 (13.7)</td>
</tr>
<tr>
<td>Nosocomial pneumonia, n @</td>
<td>0</td>
<td>7</td>
</tr>
</tbody>
</table>

Hospital and 1 year survival of pts admitted to ICU with acute exacerbation of COPD.

MG Seneff. JAMA 1995; 274
When tracheo?

% tracheo of long term MV

Fischer L Intensive Care Med 2000
The long term weaning center
RICOVERI UTIR Gussago

Anni 1992-2004 = 960 pazienti
protocol vs no protocol

Vitacca M. Am J Respir Crit Care Med 2001; 164: 225-230
Decay in respiratory function after ICU admission

Vitacca et al Monaldi 2005
Weaning from tracheotomy in long-term mechanically ventilated patients: feasibility of a decisional flowchart and clinical outcome
1-YEAR SURVIVAL CURVES IN 125 PATIENTS

- **COPD (n° 76)**
- **NON-COPD (n° 49)**

- **NON MV (44%)**
- **MV (55%)**
EFFECTS OF ACUTE ON CHRONIC RESPIRATORY FAILURE ON LONG-TERM HYPERCAPNIA AND THREE-MONTH SURVIVAL.

Michele Vitacca MD, Luca Bianchi MD, Luca Barbano MD, Mara Ziliani MD, _Nicolino Ambrosino FCCP §.

2005

Patients and interventions:

Seventy-three COPD patients recovering from a recent severe exacerbation underwent evaluation of:
Antropometric Breathing pattern, Mechanics, Lung function and arterial blood gases

at discharge from a Respiratory Intensive Care Unit.
Accuracy of prediction and Equations of accuracy for survival and hypercapnia.

<table>
<thead>
<tr>
<th></th>
<th>% of Accuracy (%) in prediction</th>
<th>Dead (n)</th>
<th>Alive (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dead</td>
<td>3877.8</td>
<td>37</td>
<td>52</td>
</tr>
<tr>
<td>Alive</td>
<td>9765.2</td>
<td>24</td>
<td>4635</td>
</tr>
<tr>
<td>Total</td>
<td>9066.7</td>
<td>531</td>
<td>6847</td>
</tr>
<tr>
<td>Equations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dead = -8.1086.46+(0.136* % IBW)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alive = -9.60010.09+(0.1734* % IBW)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>% of Accuracy (%) in distinction</th>
<th>PaCO2 &lt;48 mmHg</th>
<th>PaCO2 ≥48 mmHg</th>
</tr>
</thead>
<tbody>
<tr>
<td>PaCO2 &lt;48 mmHg</td>
<td>67.944</td>
<td>1119</td>
<td>49</td>
</tr>
<tr>
<td>PaCO2 ≥48 mmHg</td>
<td>8091</td>
<td>140</td>
<td>440</td>
</tr>
<tr>
<td>Total</td>
<td>75.676</td>
<td>259</td>
<td>4948</td>
</tr>
<tr>
<td>Equations</td>
<td>PaCO2 &lt;48 mmHg = -22.86 + (102.87+26.71*(0.0992* TI/Tot)Poesmax) + (13.1 * PTI<em>P0.0194</em> PTPmin)+(105.71 *TI/TTOT))</td>
<td>PaCO2 ≥48 mmHg = 23.28+(0.0583<em>Poesmax)+(0.0271</em>PTPmin)+(96.54<em>TI/TTOT)-18.42 +(90.38 * TI/tot) + (21.12</em>PTI)</td>
<td></td>
</tr>
</tbody>
</table>

M. Vitacca et al Chest 2005
POST - RIICU Location 113 pts

COPD (n°75)

Non COPD (n°38)

%  

H. Riab: 55%
Home: 25%
Hospice: 8.8%
Other H.: 7%
Other: 4.4%

FSM-Gussago
Raccomandazioni per la ventilazione meccanica domiciliare. Aggiornamento anno 2003. Parte 1

AIPO, GRUPPO DI STUDIO RIABILITAZIONE LUCIANO PESCE

Vol 18/5 2003 368-375
Ventilazione meccanica domiciliare

Indicazione di trattamento obbligatoria
paz. senza autonomia ventilatoria

VMD per via tracheostomica
Kyphoscoliosis
Tuberculosis seq.
COPD
Bronchiectasis
Duchenne = 126 pts

N = 276

Continuing with NIPPV

Leger P et al, Chest, 1994, 105:100
Survival of 12 years HMV in Gussago Hospital

154

83 vivi
54%

52 (63%) NMV
31(37%) VMI

36 NMV

16 OSAS

Time (Months)
Cumulative Proportion Surviving

0 12 24 36 48 60 72 84 96 108 120 132 144 156

COPD
ALS
 Other
 NMD
 RCWD
 COPD

Other
Patterns of home mechanical ventilation use in Europe: results from the Eurovent survey

Statement on Home Care for Patients with Respiratory Disorders

This official statement of the American Thoracic Society was approved by the ATS Board of Directors December 2005.

Am J Respir Crit Care Med Vol 171, pp 1443–1464, 2005

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   Needs of Respiratory Home Care Patients
Skills and Competencies Expected of Home Care Providers
   Episode of Home Health
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   Home Health Interventions and Treatments
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   Cost of Home Care
   Cost-effectiveness of Home Care
   Payment Structure in the United States
   Future Directions for Practice and Research
Conclusions
Specialista + ambulatorio dedicato

Il follow up

MMG
Nurse Home program

Assessment in ER

Treatment at discharge
  pharmacological
  non pharmacological

8 week of follow up
  nurse visit at 24 h (1 h)
  free nurse visits
  free phone
  nurse phone calls to pat.

Failure of programme
  more of 5 visits, ER admission

Hernandez ERJ 2003
TELEASSISTENZA PNEUMOLOGICA

HOSPITAL

INTERNET o TELEFONO

centro servizi
Strumenti disponibili

- Telefono
- e-mail
- ECG
- SatO2
- tracciato di flusso
- diario clinico
- cartella infermieristica

SatO2 93%
p<0.005

Vitacca et al 2005
Survey on 1928 Italian patients with HMV
Survey on 1928 Italian patients with HMV

- Self sufficient: 34%
- Family carers: 48%
- Non professional carers: 3%
- Professional non nursing carers: 4%
- Nursing care: 7%
- Residential care: 2%
- Nursing home: 2%

Home facilities vs. alternative facilities.
Domains of End-of-Life Care from Patients’ Perspectives
Singer et al. JAMA 1999; 281:163-8

- Pain relief
- Avoid prolongation of life
- Sense of control
- Relief of burden
- Strengthening relationship with beloved
# Patients’ Perspectives on Physician Skill in End-of-Life Care*

Differences Between Patients With COPD, Cancer, and AIDS

J. Randall Curtis, MD, MPH, FCCP; Marjorie D. Wenrich, MPH; Jan D. Carline, PhD; Sarah E. Shannon, PhD, RN; Donna M. Ambrozy, PhD; and Paul G. Ramsey, MD

<table>
<thead>
<tr>
<th>Patient Groups</th>
<th>AIDS (n = 36)</th>
<th>Cancer (n = 19)</th>
<th>COPD (n = 24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional support</td>
<td>1 (16.7)†</td>
<td>1 (21.8)†</td>
<td>1 (15.1)†</td>
</tr>
<tr>
<td>Communication with patients</td>
<td>2 (12.3)†</td>
<td>2 (14.2)†</td>
<td>3 (13.6)†</td>
</tr>
<tr>
<td>Accessibility and continuity</td>
<td>3.5 (12.0)†</td>
<td>4 (12.2)†</td>
<td>2 (14.3)†</td>
</tr>
<tr>
<td>Competence</td>
<td>3.5 (12.0)†</td>
<td>3 (12.8)†</td>
<td>5 (9.8)</td>
</tr>
<tr>
<td>Personalization†</td>
<td>5 (9.0)</td>
<td>5 (9.3)</td>
<td>11 (3.8)</td>
</tr>
<tr>
<td>Attention to patient values</td>
<td>7 (7.3)</td>
<td>6 (5.8)</td>
<td>8 (5.7)</td>
</tr>
<tr>
<td>Patient education</td>
<td>11 (3.3)</td>
<td>7 (5.5)</td>
<td>4 (11.7)†</td>
</tr>
<tr>
<td>Respect and humility</td>
<td>6 (8.3)</td>
<td>8 (5.2)</td>
<td>9 (5.3)</td>
</tr>
<tr>
<td>Pain and symptom management</td>
<td>9 (5.3)</td>
<td>9 (3.8)</td>
<td>6.5 (6.8)</td>
</tr>
<tr>
<td>Support of patient decision making</td>
<td>8 (7.0)</td>
<td>10 (3.5)</td>
<td>10 (4.9)</td>
</tr>
<tr>
<td>Team communication and coordination</td>
<td>11 (3.3)</td>
<td>11 (3.2)</td>
<td>6.5 (6.8)</td>
</tr>
<tr>
<td>Inclusion and recognition of family</td>
<td>11 (3.3)</td>
<td>12 (2.6)</td>
<td>12 (2.3)</td>
</tr>
<tr>
<td>Total counts of codes</td>
<td>300</td>
<td>344</td>
<td>265</td>
</tr>
</tbody>
</table>

*CHEST 2002;122*
These programs are underutilized
lower awareness of Hospice eligibility criteria than oncologists
unpredicatability of death
limitations on insurances

hospice care offers expertize for palliation;
bridge to home
eligibility criteria and services available need to be known
CONCLUSIONI

Grazie al miglioramento delle cure, sempre più pazienti respiratori arrivano a vivere una condizione di prolungata sopravvivenza con problematiche di grave cronicità.

La gestione della BPCO è divenuta ormai una complessa presa in carico (di tutte le figure professionali) di sintomi fisici e psicosociali, dipendenze, problematiche multidisciplinari e multifattoriali.

Operatori sanitari e famiglia devono sempre più collaborare per prendere comuni decisioni cliniche ed etiche.
CONCLUSIONI

spedalizzazione domiciliare
telesorveglianza

Programmi
ospedalieri

Casa
RSA/Hospice
Randomised trial of ambulatory oxygen in oxygen-dependent COPD

Y. Lacasse*, R. Lecours², C. Pelletier*, R. Bégin¹ and F. Maltais*

The current results do not support the widespread provision of ambulatory oxygen to patients with oxygen-dependent chronic obstructive pulmonary disease

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Number of hours</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxygen concentrator use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>From counter clockwise reading</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-reported</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time spent out of the home</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Without using ambulatory cylinders</td>
<td>1.7 (1.2–2.1)</td>
<td>0.32</td>
</tr>
<tr>
<td>Using ambulatory cylinders</td>
<td>1.3 (0.8–1.8)</td>
<td>0.30†</td>
</tr>
<tr>
<td>With oxygen concentrator + processed air</td>
<td>1.4 (0.9–1.8)</td>
<td>0.46</td>
</tr>
<tr>
<td>Without using ambulatory cylinders</td>
<td>0.5 (0.3–0.7)</td>
<td>0.59†</td>
</tr>
<tr>
<td>Using ambulatory cylinders</td>
<td>0.5 (0.3–0.7)</td>
<td>0.99†</td>
</tr>
<tr>
<td></td>
<td>Failure Group (n=14)</td>
<td>Success Group (n=25)</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Sex M/F</td>
<td>12/2</td>
<td>20/5</td>
</tr>
<tr>
<td>Age yrs</td>
<td>61±9 (38–73)</td>
<td>64±6 (38–82)</td>
</tr>
<tr>
<td>Weight kg</td>
<td>53±12 (33–83)</td>
<td>67±16 (39–123)</td>
</tr>
<tr>
<td>NPI*</td>
<td>46±22 (20–74)</td>
<td>24±8 (13–38)</td>
</tr>
<tr>
<td>Albumin g·dL⁻¹</td>
<td>3.8±0.35 (2.6–4.1)</td>
<td>4.1±0.4 (3.5–4.6)</td>
</tr>
<tr>
<td>TSF mm</td>
<td>9±5 (4–20)</td>
<td>22±11 (13–31)</td>
</tr>
<tr>
<td>Transferrin mg·dL⁻¹</td>
<td>168±31 (120–200)</td>
<td>194±29 (153–280)</td>
</tr>
<tr>
<td>Anergy %</td>
<td>95</td>
<td>69</td>
</tr>
<tr>
<td>IBW* %</td>
<td>86±21 (47–110)</td>
<td>109±31 (77–170)</td>
</tr>
<tr>
<td>APACHE II*</td>
<td>20±7 (15–29)</td>
<td>12±3 (10–22)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Failure Group (n=14)</th>
<th>Success Group (n=25)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( P_{a\text{O}<em>2}/F</em>{\text{I}_\text{O}_2} )</td>
<td>2.25±0.10 (2.1–2.4)</td>
<td>2.60±0.13 (2.21–2.70)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>( P_{a\text{CO}_2} ) kPa</td>
<td>7.8±1.3 (4.5–9.1)</td>
<td>6.2±1.0 (4.2–8.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>pH</td>
<td>7.34±0.03 (7.30–7.40)</td>
<td>7.36±0.03 (7.33–7.42)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>( \text{HCO}_3^- ) mmol·L⁻¹</td>
<td>35±5 (22–43)</td>
<td>30±6 (21–39)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>( S_a\text{O}_2 ) %</td>
<td>82±9 (62–93)</td>
<td>89±7 (69–94)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>FEV₁ % pred</td>
<td>20±11 (15–44)</td>
<td>41±18 (17–60)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>FVC % pred</td>
<td>37±9 (18–49)</td>
<td>53±19 (30–68)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>VC % pred</td>
<td>44±10 (29–60)</td>
<td>60±18 (24–70)</td>
<td>&lt;0.005</td>
</tr>
<tr>
<td>FEV₁/FVC %</td>
<td>37±11 (22–59)</td>
<td>51±11 (30–64)</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>