

Advanced COPD Case Study

Darcy D. Marciniuk, MD FRCPC FCCP FCAHS

Professor of Respiriology, Critical Care and Sleep Medicine, Royal University Hospital
Associate Vice-President Research, University of Saskatchewan
Saskatoon, SK, CANADA



UNIVERSITY OF
SASKATCHEWAN

By the end of this presentation ...

- Appreciate the realities and unmet needs of **patients with Advanced COPD**
- Utilize effective **pharmacologic and non-pharmacologic therapies** to **improve symptoms** and **prevent acute exacerbations of COPD**
- Outline a **practical action plan** for the optimal management and caring of advanced COPD patients, that ensures **patients (and their families) receive the best care possible**



Conflict of Interest Disclosure

Consultancy

Alberta Lung Association, AstraZeneca, Boehringer-Ingelheim, Canadian Foundation for Healthcare Improvement, Chinese Committee of Health and Family Planning, GlaxoSmithKline, Health Canada, Lung Association of Saskatchewan, Mylan, Novartis, Saskatchewan Ministry of Health, Saskatchewan Health Authority, Yukon Health and Social Services

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Employee

University of Saskatchewan



COPD Patient Presents to the ED ...

- 76-yr-old female brought via ambulance to the ED with severe shortness of breath. Increased cough, sputum production and SOB x 6 days. Has used salbutamol MDI 30x so far today
- Diagnosed COPD 12 yrs ago, FEV₁ 23% predicted, continuous O₂
- Lives with her husband, and dependent on him
 - **55th wedding anniversary last month**
- Didn't go see her family physician earlier because **“the doctor is always so busy”**



... in the Emergency Department

- **She does not look too good!**
- Initial ABGs: PaO₂ 56 mmHg; pH 7.11; PaCO₂ 97 mmHg, HCO₃ 43 meq/L [4 L/min O₂ via nasal prongs]
- NIV initiated, but soon thereafter becomes less responsive
- **ED asks husband if they should intubate. Husband asks what does that mean, and what will happen if you don't?**
 - told 'she will die' – Husband says 'then intubate'



... in the Critical Care Unit

- Respiratory failure, pneumonia, hyperglycemia, impaired renal function
- Then ..., pulmonary embolism
- Then..., ‘doesn’t seem to be moving her left side’
- Then..., she passes away on day 8

Is there anything you would have done, or have wanted done, or not done, a little bit differently?



Clara (... 3 year earlier)

- 73-yr-old female with **severe COPD**
 - tiotropium (LAMA), indacaterol (LABA) and prn salbutamol (SABA)
- **3 chest infections in the past year**
 - responded to antibiotics - received prednisone for [only] 1
- **Did not receive the influenza vaccination** last year
- Tries to walk daily, but difficult – too SOB, **“I’m always so tired”**
- **CAT score: 31. 6MWD: 197 m with SpO₂ 82%**
- Post-bronchodilator spirometry:

| | | | |
|-----------------------|------|----------|---------------|
| FVC (L) | 2.29 | 70% pred | (2.4 - 4.1) |
| FEV ₁ (L) | 0.81 | 36% pred | (1.7 - 2.9) |
| FEV ₁ /FVC | 35% | | (61.0 - 79.7) |



More to the Story ...

- Clara states that her **husband is very supportive**
 - but worries how he would do if she were to die
 - *“He can’t cook – he would starve”*
- She volunteers that she would never want a machine to keep her alive, but has **never discussed or shared this with her husband**
 - *“I’m afraid to ...”*



Let's Optimize Clara's Management!

- Pharmacologic Therapy
- Non-Pharmacologic Therapies
- Prevent (or reduce the severity of) future AECOPD
- Attention to co-morbid/co-existent conditions
- Comprehensive Chronic Disease Management
- Unique Considerations for Advanced COPD



In addition to vaccination and participation in a Pulmonary Rehabilitation program, what would be the next most appropriate recommendation?

- a. Continue tiotropium and indacaterol, and add roflumilast
- b. Continue tiotropium and indacaterol, and add daily azithromycin
- c. Continue tiotropium, discontinue indacaterol, and add a combination inhaled corticosteroid with long-acting β 2-agonist (ICS/LABA)
- d. Discontinue tiotropium and indacaterol, and switch to a combination inhaled corticosteroid with long-acting β 2-agonist (ICS/LABA)

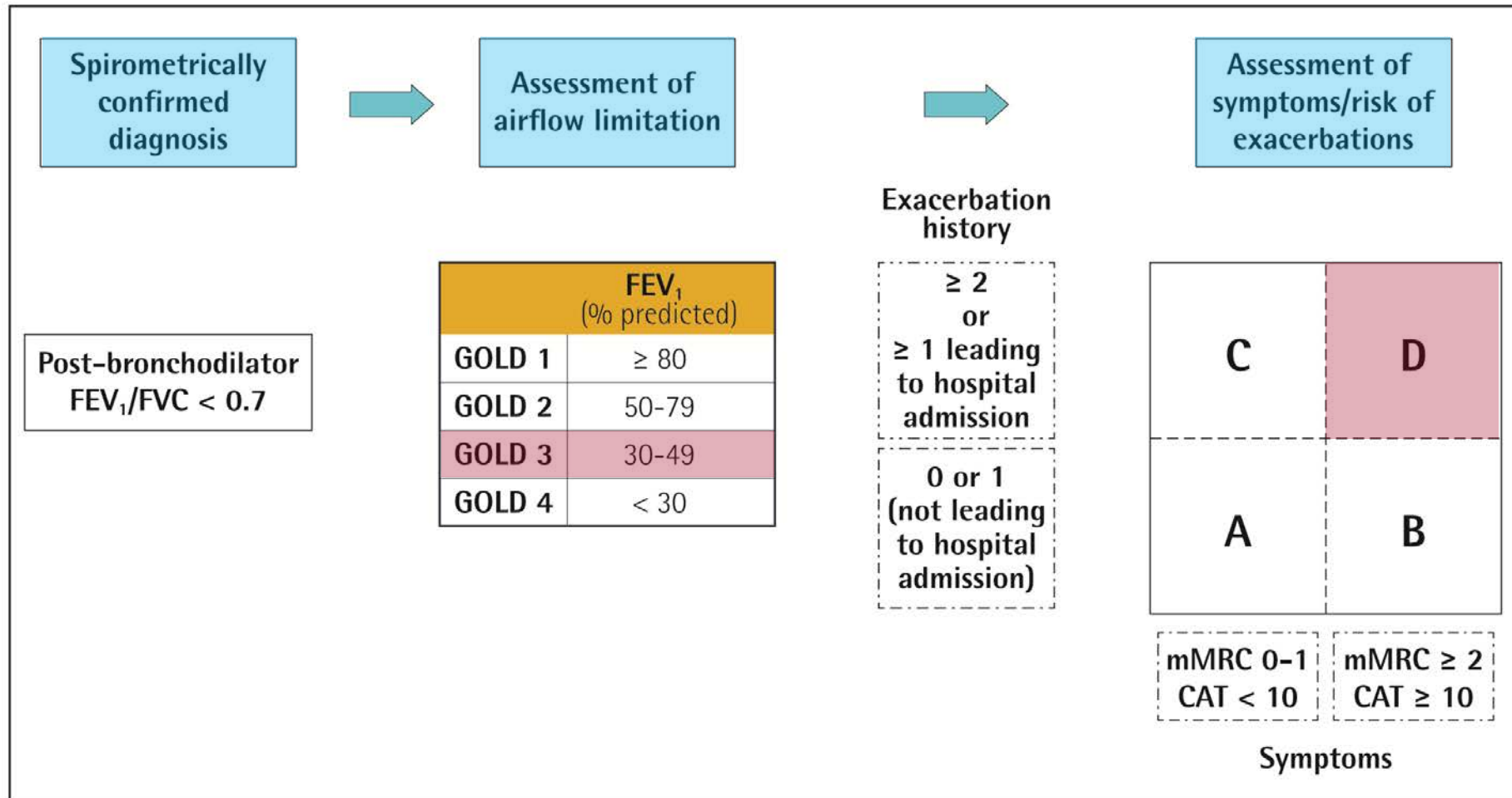


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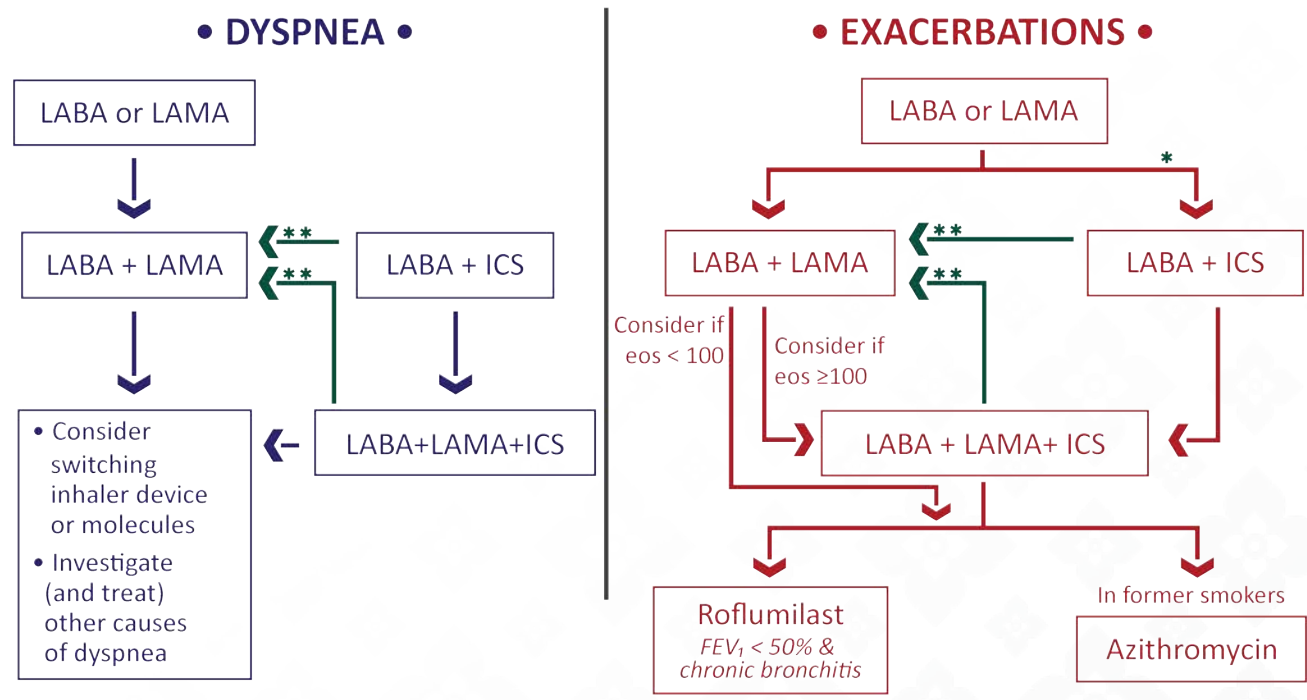
“Refined” ABCD Assessment Tool





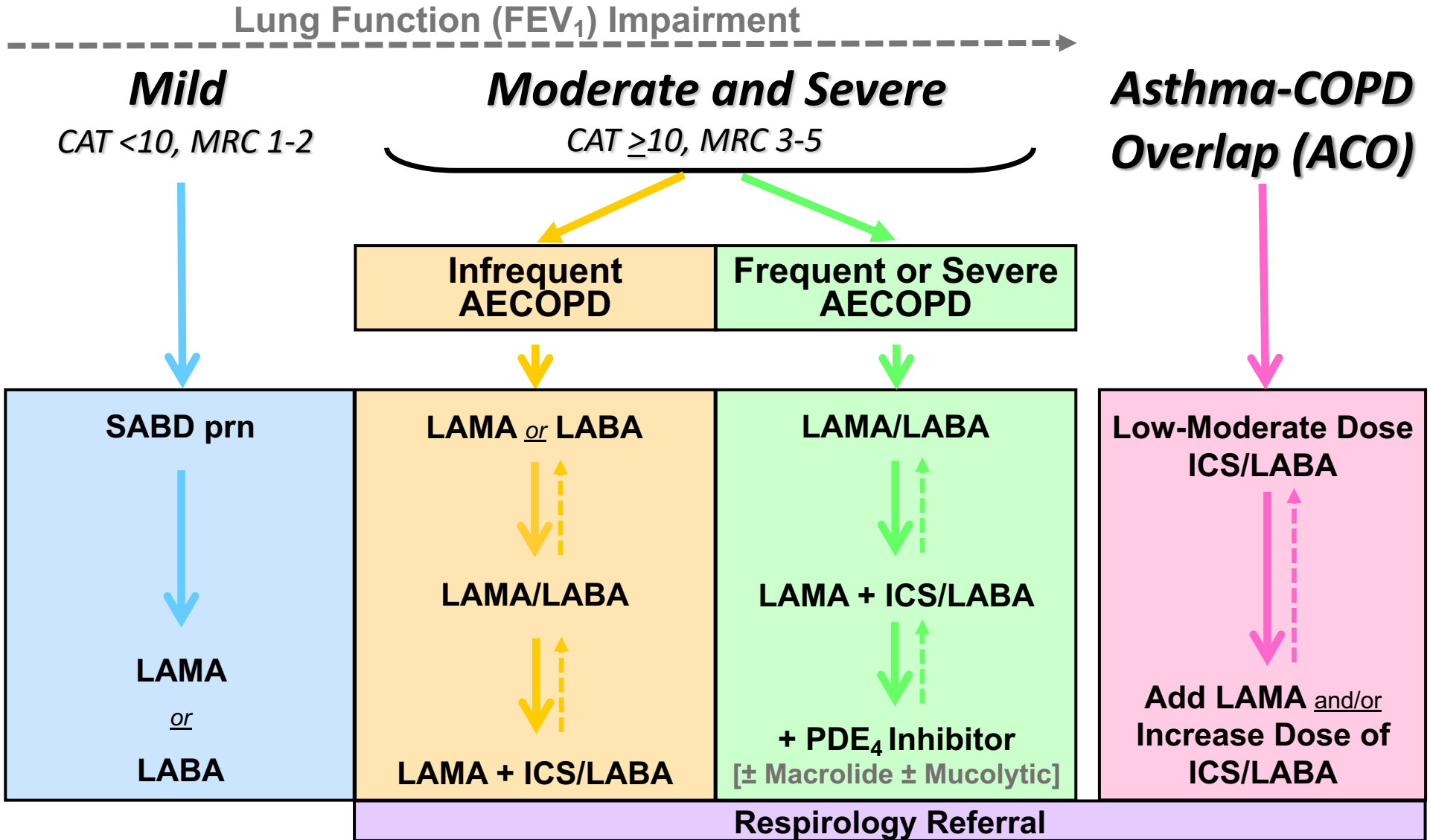
FOLLOW-UP PHARMACOLOGICAL TREATMENT

- IF RESPONSE TO INITIAL TREATMENT IS APPROPRIATE, MAINTAIN IT.
- IF NOT:
 - ✓ Consider the predominant treatable trait to target (dyspnea or exacerbations)
 - Use exacerbation pathway if both exacerbations and dyspnea need to be targeted
 - ✓ Place patient in box corresponding to current treatment & follow indications
 - ✓ Assess response, adjust and review
 - ✓ These recommendations do not depend on the ABCD assessment at diagnosis



Follow-up Pharmacologic Treatment

COPD Pharmacotherapy





Clara – Pulmonary Rehabilitation (8 wks)

| | BEFORE | AFTER |
|-------------|----------|----------|
| 6MWD | 197 m | 242 m |
| SGRQ | 49 units | 41 units |
| CAT | 29 | 22 |

- Significant, and clinically important, improvements in walking distance and quality of life ...
 - administered rollator and supplemental O₂ with activity → additional 51 m (293 m) increase achieved



Clara still has 2 AECOPDs in 12 months. Which additional therapeutic intervention would be effective for the prevention of future AECOPD?

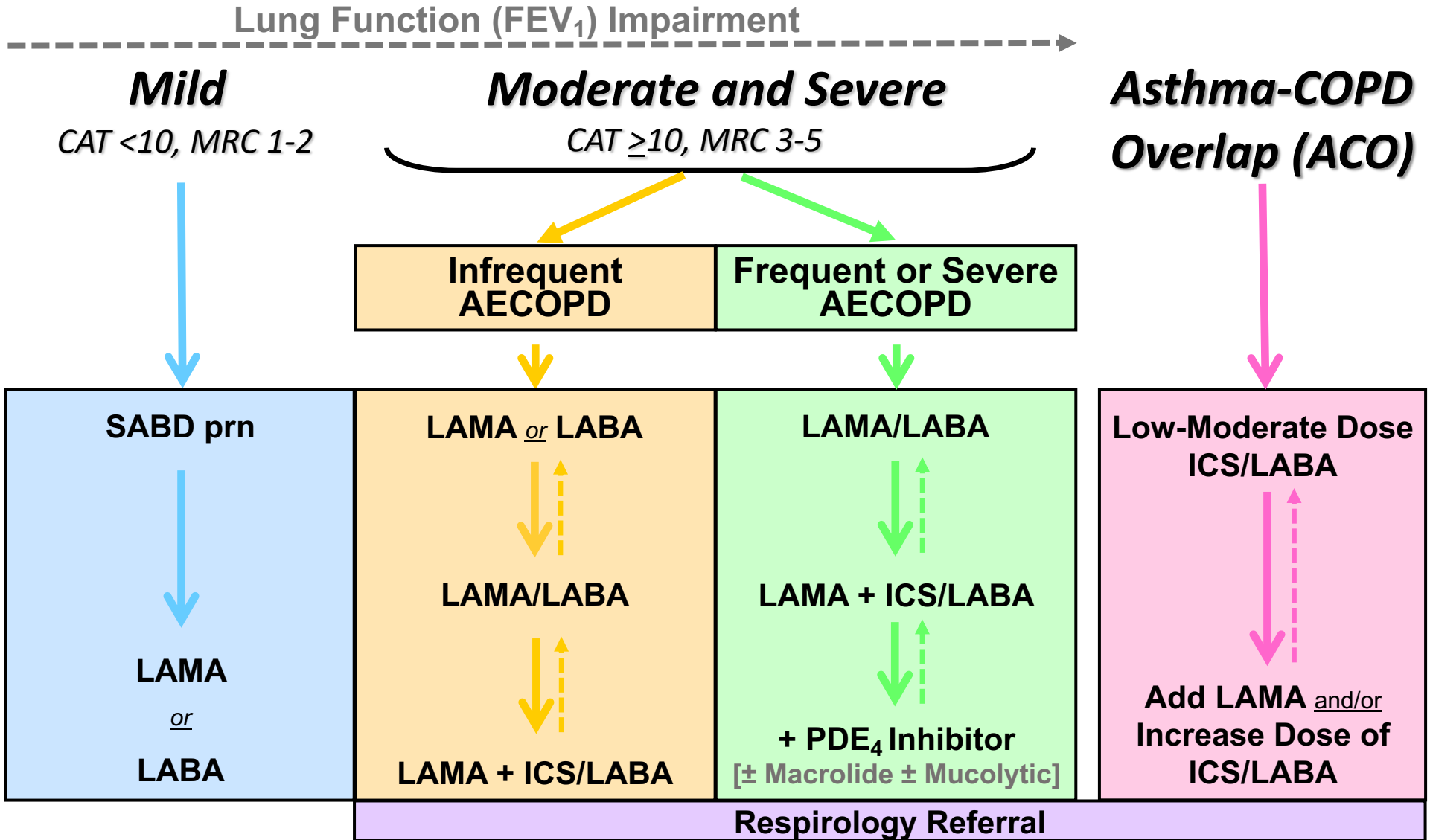
- a. Roflumilast
- b. Tele-monitoring
- c. Systemic corticosteroids
- d. Statins



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COPD Pharmacotherapy



Prevention of Acute Exacerbations of COPD

American College of Chest Physicians and Canadian Thoracic Society Guideline

Gerard J. Criner, MD, FCCP; Jean Bourbeau, MD, FCCP; Rebecca L. Diekemper, MPH; Daniel R. Ouellette, MD, FCCP; Donna Goodridge, RN, PhD; Paul Hernandez, MDCM; Kristen Curren, MA; Meyer S. Balter, MD, FCCP; Mohit Bhutani, MD, FCCP; Pat G. Camp, PhD, PT; Bartolome R. Celli, MD, FCCP; Gail Dechman, PhD, PT; Mark T. Dransfield, MD; Stanley B. Fiel, MD, FCCP; Marilyn G. Foreman, MD, FCCP; Nicola A. Hanania, MD, FCCP; Belinda K. Ireland, MD; Nathaniel Marchetti, DO, FCCP; Darcy D. Marciniuk, MD, FCCP; Richard A. Mularski, MD, MSHS, MCR, FCCP; Joseph Ornelas, MS; Jeremy D. Road, MD; and Michael K. Stickland, PhD



BACKGROUND: COPD is a major cause of morbidity and mortality in the United States as well as throughout the rest of the world. An exacerbation of COPD (periodic escalations of symptoms of cough, dyspnea, and sputum production) is a major contributor to worsening lung function, impairment in quality of life, need for urgent care or hospitalization, and cost of care in COPD. Research conducted over the past decade has contributed much to our current understanding of the pathogenesis and treatment of COPD. Additionally, an evolving literature has accumulated about the prevention of acute exacerbations.

METHODS: In recognition of the importance of preventing exacerbations in patients with COPD, the American College of Chest Physicians (CHEST) and Canadian Thoracic Society (CTS) joint evidence-based guideline (AECOPD Guideline) was developed to provide a practical, clinically useful document to describe the current state of knowledge regarding the prevention of acute exacerbations according to major categories of prevention therapies. Three key clinical questions developed using the PICO (population, intervention, comparator, and outcome) format addressed the prevention of acute exacerbations of COPD: nonpharmacologic therapies, inhaled therapies, and oral therapies. We used recognized document evaluation tools to assess and choose the most appropriate studies and to extract meaningful data and grade the level of evidence to support the recommendations in each PICO question in a balanced and unbiased fashion.

RESULTS: The AECOPD Guideline is unique not only for its topic, the prevention of acute exacerbations of COPD, but also for the first-in-kind partnership between two of the largest thoracic societies in North America. The CHEST Guidelines Oversight Committee in partnership with the CTS COPD Clinical Assembly launched this project with the objective that a systematic review and critical evaluation of the published literature by clinical experts and researchers in the field of COPD would lead to a series of recommendations to assist clinicians in their management of the patient with COPD.

CONCLUSIONS: This guideline is unique because it provides an up-to-date, rigorous, evidence-based analysis of current randomized controlled trial data regarding the prevention of COPD exacerbations.

CHEST 2015; 147(4):894-942

**Criner GJ, et al.
Chest 2015;
147:894-942**



Non-Pharmacologic Therapies

Recommended

- Annual **influenza vaccine**
- **Pulmonary rehabilitation** (AECOPD \leq 4 weeks)
- **Education and case management** with monthly follow-up

Suggested

- **Pneumococcal vaccine**
- **Smoking cessation**
- **Education and action plan and case management**

Not Suggested

- **Pulmonary rehabilitation** (AECOPD $>$ 4 weeks)
- **Education or case management alone**
- **Education with action plan but without case management**
- **Telemonitoring**



Pharmacologic Inhaled Therapies

Recommended

- **LABA** vs. placebo
- **LAMA** vs. placebo
- **LABA or SAMA**
- **ICS (LABA combination)** vs. placebo, LABA or ICS alone
- **LABA (anticholinergic or ICS) or anticholinergic monotherapy**

Suggested

- **SAMA + SABA** vs. SABA
- **SAMA + LABA** vs. LABA
- **SAMA** vs. SABA
- **LABA** vs. SAMA
- **LAMA/ICS/LABA** vs. placebo



Pharmacologic Oral Therapies

Suggested

- Long-term **macrolides**
- **PDE4 inhibitors**
- **Theophylline**
- **N-acetylcysteine**
- **Carbocysteine**

Not Recommended

- **Systemic corticosteroids** in an attempt to decrease AECOPD >t 30 days after initial event
- **Statins**



Which of the following has been shown to be effective in preventing AECOPD in moderate-severe COPD pts and a history of prior exacerbation(s)?

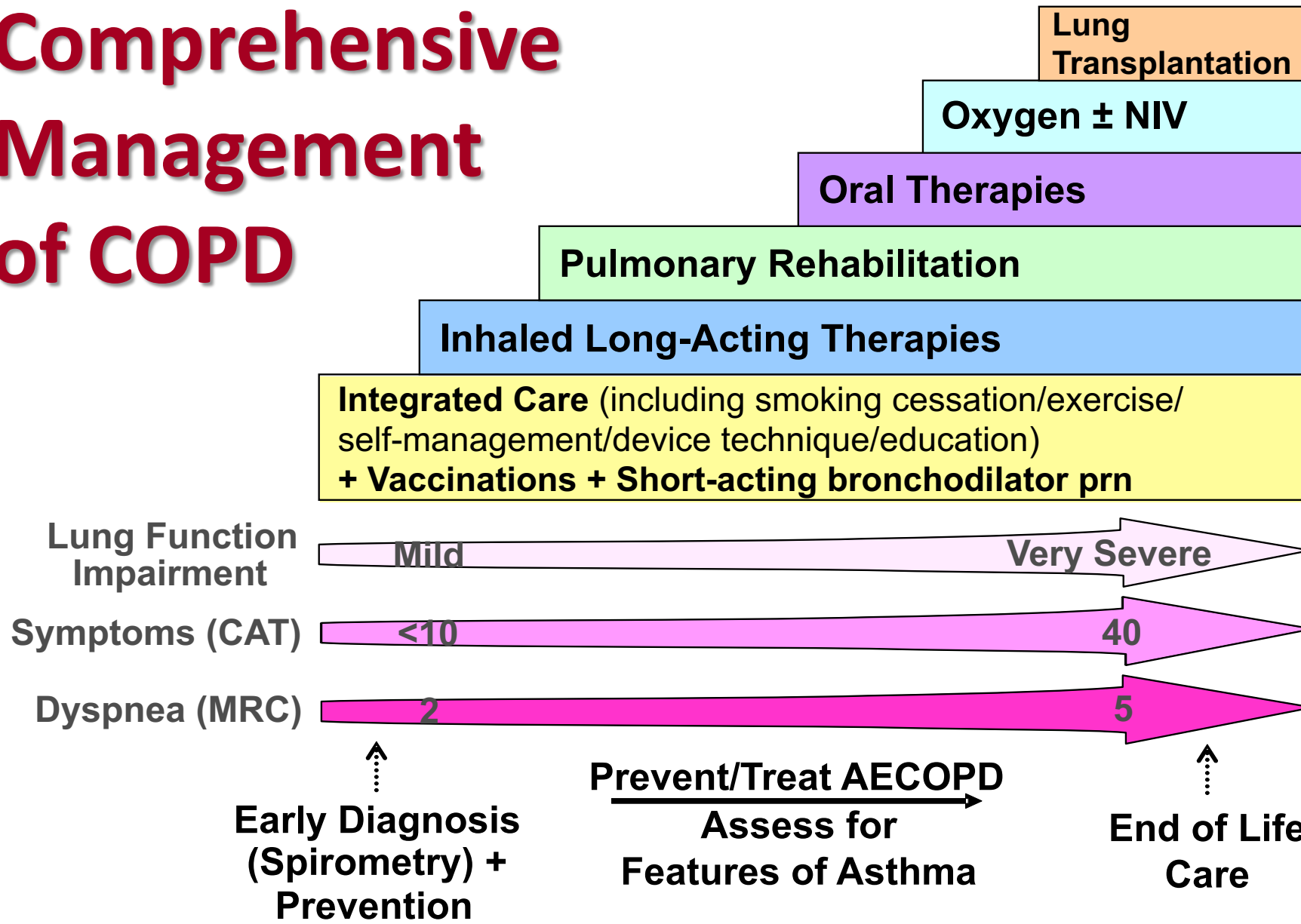
- a. Action Plan
- b. Action Plan and Education
- c. Action Plan, Education and Case Management
- d. Action Plan, Education and Tele-monitoring



Which of the following has been shown to be effective in preventing AECOPD in moderate-severe COPD pts and a history of prior exacerbation(s)?

- a. Action Plan
- b. Action Plan and Education
- c. Action Plan, Education and Case Management**
- d. Action Plan, Education and Tele-monitoring

Comprehensive Management of COPD





Benefits of Education

- Provides Group Support
- Improves Self-Confidence
- Addresses Family Concerns
- Provides Disease Specific Information
- Improves Risk Factor Awareness
- Helps with Lifestyle Changes



Benefits of Exercise

- Lowers Blood Pressure
- Improves Cholesterol Profile
- Assists with Weight Control
- Helps with Diabetes Prevention and Management
- Improves Quality of Life
- Decreases Stress Level
- Increases Energy Level
- Strengthens Bones



Benefits of Self-management

- Builds confidence
- Promotes ability to take control
- Provides practise on action planning
- Develops problem solving abilities
- Improves symptom management



CDM Program Goals

To develop and implement coordinated, effective and efficient care for people with chronic conditions

To optimize care of people by promoting a team approach and enhanced self-management of disease

To promote inter-professional collaboration and education



Optimizing Chronic Disease Management

For more information about the CDM Program, please contact:

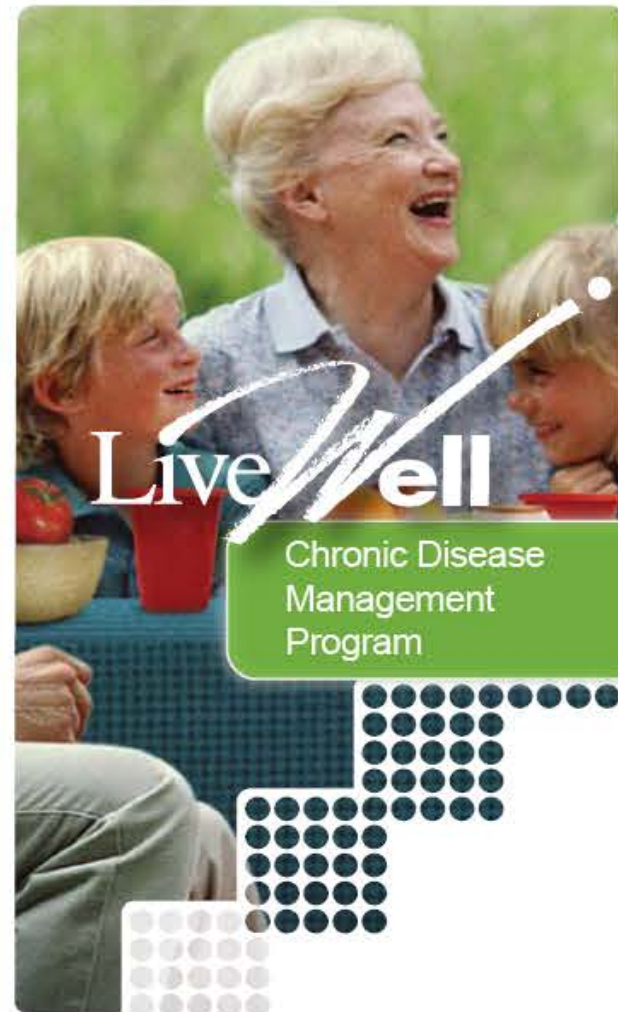
Chronic Disease Management Program

Royal University Hospital,
103 Hospital Drive
Saskatoon SK S7N 0W8

Office: (306) 655-LIVE
(306) 655-5483

Facsimile: (306) 655-6758
live-well@saskatoonhealthregion.ca

PROGRAM OF



Live Well

Chronic Disease Management Program

Optimizing Chronic Disease Management

PROGRAM OF



Group Exercise and Rehabilitation

- Community-based exercise and rehabilitation programming
- Group education
- Group and social support

Disease-Specific Management

- Inter-professional team working with the patient, family, and Family Physician
- Evidence-based optimal care delivery

Patient Self-Management

- Individualized plan of action
- Patient-led group support “LiveWell with Chronic Conditions”
- Enhanced self-management skills





Patient Benefits and Outcomes

- **Improved exercise tolerance** (64 m in 6MWD)
- **Improved quality of life**
 - SGRQ reduced by 8.3 (52.9 to 44.6) at 3 months, 5.6 at 6 months, 5.3 at 1 year
- **Decreased healthcare utilization:**
 - COPD re-admissions reduced by 71%, hospital days by 62%, ER visits by 44% at 1 year
 - 3 year follow-up: COPD re-admissions reduced by 64%, hospital days by 29%, ER visits by 30%
- **Improved quality of life, enhanced exercise tolerance, reduced exacerbations and hospitalizations, and reduced healthcare costs ('cost-dominant').**



Specific triggers that should prompt Advanced Care Planning (ACP) discussions include which of the following?

- a. FEV₁ <30% predicted
- b. Oxygen dependence
- c. ≥1 hospital admissions in prior year for AECOPD
- d. Decreased functional status, and weight loss/cachexia
- e. All of the above



Specific triggers that should prompt Advanced Care Planning (ACP) discussions include which of the following?

- a. $FEV_1 < 30\%$ predicted
- b. Oxygen dependence
- c. ≥ 1 hospital admissions in prior year for AECOPD
- d. Decreased functional status, and weight loss/cachexia
- e. **All of the above**



When Is A Patient Nearing EOL?

- Poor functional status (**MRC 5**)
- Severe acute **exacerbation(s)**
- **FEV₁** < 30-40% predicted
- Signs of **pulmonary hypertension**
- Respiratory failure with **CO₂ retention**
- **Body mass index** < 20 kg/m²
- Patient is starting to **wish for or talk about death**
- *“Dying this year would not be a surprise”*



'Quality' Advanced and EOL Care

- Timely, accurate and open **communication**
 - what they want, and what they do not want ...
 - **assure the patient that no decision is 'final'**
- Appropriate **symptom control**
 - dyspnea, fear, pain, depression, anxiety, ...
- **Continuity of care**
- Patient and family **satisfaction** with care
- Minimal **caregiver burden**
- 'Best' **quality of life** during the time patient is living with advanced COPD
 - as **judged by the patient and family**



So Let's Get Back To Clara ...

- **Optimal pharmacologic and non-pharmacologic management**
 - including pulmonary rehabilitation, rollator with activity, vaccinations
- Early intervention with appropriate **recognition and treatment of AECOPD**, and active management to **prevent future AECOPD**
- **Effective case-management** of this patient's advanced disease
- Earlier and open **discussions regarding advanced care planning**
 - severity of disease, potential outcomes/options, patient/family wishes
 - **assist the patient and family to be 'best-informed'**



... in the Critical Care Unit

- Respiratory failure, pneumonia, hyperglycemia, impaired renal function
- Then ..., pulmonary embolism
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Is there anything you would have done, or have wanted done, or not done, a little bit differently?

... YES!

