Blue, Pink and everything in between: an update on COPD

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Disclosures

• I have eaten lunches provided by many pharmaceutical companies (GSK, Boeringer-Ingleheim, AstraZeneca, Novartis)
Outline

1. Highlights of the 2017 COPD statements
   - What’s with inhaled corticosteroids in COPD?
   - Inhaler review
2. Update on smoking cessation
3. INSPIRED™ to reduce hospitalizations in COPD
John

- 71 year old retired carpenter
- Presents to your clinic with slowly progressive dyspnea
  - mMRC4
- Known COPD (FEV$_1$ 47%).
- 3 Hospitalizations for AECOPD in the past year
- Smokes 1 ppd (60 pack-year Hx)
- COPD Meds:
  - Tiotropium 18ug daily (LAMA)
  - Salbutamol prn (SABA)
What patient category is John in?

a. A
b. B
c. C
d. D
e. Huh?
Spirometrically confirmed diagnosis

Assessment of airflow limitation

Exacerbation history

FEV\textsubscript{1} (% predicted)

<table>
<thead>
<tr>
<th>GOLD 1</th>
<th>≥ 80</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOLD 2</td>
<td>50–79</td>
</tr>
<tr>
<td>GOLD 3</td>
<td>30–49</td>
</tr>
<tr>
<td>GOLD 4</td>
<td>&lt; 30</td>
</tr>
</tbody>
</table>

Post-bronchodilator FEV\textsubscript{1}/FVC < 0.7

≥ 2 or ≥ 1 leading to hospital admission

0 or 1 (not leading to hospital admission)

Assessment of symptoms/risk of exacerbations

Symptoms

mMRC 0–1

CAT < 10

A

B

C

D

mMRC ≥ 2

CAT ≥ 10

Vogelmeier et al. AJRCCM 2017
Spirometrically confirmed diagnosis

Assessment of airflow limitation

Exacerbation history

≥ 2 or ≥ 1 leading to hospital admission

0 or 1 (not leading to hospital admission)

mMRC 0–1

CAT < 10

Symptoms

C

D

A

B

Post-bronchodilator FEV₁/FVC < 0.7

FEV₁ (% predicted)

GOLD 1

≥ 80

GOLD 2

50–79

GOLD 3

30–49

GOLD 4

< 30

Assessment of symptoms/risk of exacerbations
COPD Assessment Test (CAT)

Examples:

- I am very happy
- I am very sad

I never cough
0 1 2 3 4 5
I cough all the time

I have no phlegm (mucus)
in my chest at all
0 1 2 3 4 5
My chest is completely full of phlegm (mucus)

My chest does not feel tight at all
0 1 2 3 4 5
My chest feels very tight

When I walk up a hill or one flight of stairs I am not breathless
0 1 2 3 4 5
When I walk up a hill or one flight of stairs I am very breathless

I am not limited doing any activities at home
0 1 2 3 4 5
I am very limited doing activities at home

I am confident leaving my home despite my lung condition
0 1 2 3 4 5
I am not at all confident leaving my home because of my lung condition

I sleep soundly
0 1 2 3 4 5
I don't sleep soundly because of my lung condition

I have lots of energy
0 1 2 3 4 5
I have no energy at all

TOTAL SCORE

COPD Assessment Test and the CAT logo is a trade mark of the GlaxoSmithKline group of companies.
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Last Updated: February 24, 2012

www.catestonline.org
<table>
<thead>
<tr>
<th>Patient category C</th>
<th>Patient category D</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk</td>
<td>High risk</td>
</tr>
<tr>
<td>few symptoms</td>
<td>many symptoms</td>
</tr>
<tr>
<td>GOLD: 3–4</td>
<td>GOLD: 3–4</td>
</tr>
<tr>
<td>Exacerbations: ≥2/year or ≥1 admission</td>
<td>Exacerbations: ≥2/year or ≥1 admission</td>
</tr>
<tr>
<td>CAT score: &lt;10</td>
<td>CAT score: ≥10</td>
</tr>
<tr>
<td>mMRC: 0–1</td>
<td>mMRC: ≥2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patient category A</th>
<th>Patient category B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low risk</td>
<td>Low risk</td>
</tr>
<tr>
<td>few symptoms</td>
<td>many symptoms</td>
</tr>
<tr>
<td>GOLD: 1–2</td>
<td>GOLD: 1–2</td>
</tr>
<tr>
<td>Exacerbations: ≤1/year</td>
<td>Exacerbations: ≤1/year</td>
</tr>
<tr>
<td>CAT score: &lt;10</td>
<td>CAT score: ≥10</td>
</tr>
<tr>
<td>mMRC: 0–1</td>
<td>mMRC: ≥2</td>
</tr>
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</table>
What will you do with his inhalers?

a) Add LABA (dual bronchodilator therapy)
b) Add LABA/ICS combination (triple therapy)
c) Tell him the inhalers won’t help him; he can stop them
d) Add ipratropium (SAMA) prn
e) No change
Lung Function (FEV₁) Impairment

**Mild**
- CAT <10, MRC 1-2

**Moderate and Severe**
- CAT ≥10, MRC 3-5

**Asthma-COPD Overlap (ACO)**

**In frequent AECOPD**
- Infrequent AECOPD

**Frequent or Severe AECOPD**
- Frequent or Severe AECOPD

- **SABD prn**
  - LAMA or LABA
  - LAMA or LABA

- **LAMA or LABA**
  - LAMA/LABA
  - LAMA + ICS/LABA
  - LAMA + ICS/LABA + PDE₄ Inhibitor [± Macrolide ± Mucolytic]

- **Low-Moderate Dose ICS/LABA**
  - Add LAMA and/or Increase Dose of ICS/LABA

**Respirologist Referral**

Bourbeau et al. Canadian Journal sleep, critical care, sleep medicine 2017
When do you add inhaled corticosteroids (ICS)?

a) Not needed for this patient: He doesn’t have asthma
b) If he continues to exacerbate despite LAMA/LABA
c) When the IM resident tells you to
d) Always. More is better in COPD
Risks of Inhaled Corticosteroids (ICS)

- **Pneumonia** (OR 2.0)
  - Elderly
  - BMI >25
  - More severe airflow obstruction

- **Non-tuberculous mycobacteria** (OR 2.51)

- Osteoporosis

- Cataracts

- Glaucoma

Ernst et al. ERJ 2015; 45: 525-537
Yiu et al. Annals ATS 2018
Withdrawal of Inhaled Glucocorticoids and Exacerbations of COPD

A Moderate or Severe COPD Exacerbation

Hazard ratio, 1.06 (95% CI, 0.94–1.19)
P=0.35 by Wald's chi-square test

Estimated Probability

Weeks to Event

No. at Risk
IGC continuation
1243 1059 927 827 763 694 646 615 581 14
IGC withdrawal
1242 1090 965 825 740 688 646 607 570 19

Magnussen et al. NEJM 2014
Once-Daily Single-Inhaler Triple versus Dual Therapy in Patients with COPD

David A. Lipson, M.D., Frank Barnhart, D.V.M., Noushin Brealey, M.D., Jean Brooks, M.Sc., Gerard J. Criner, M.D., Nicola C. Day, Ph.D., Mark T. Dransfield, M.D., David M.G. Halpin, M.D., MeiLan K. Han, M.D., C. Elaine Jones, Ph.D., Sally Kilbride, M.Sc., Peter Lange, M.D., David A. Lomas, M.D., Ph.D., Fernando J. Martinez, M.D., Dave Singh, M.D., Maggie Tabberer, M.Sc., Robert A. Wise, M.D., and Steven J. Pascoe, M.B., B.S., for the IMPACT Investigators

Is triple therapy more effective at reducing exacerbations than dual therapy?

Lipson et al. NEJM 2018; 378 (18)
Figure 1. Moderate or Severe COPD Exacerbations (Intention-to-Treat Population).

I bars indicate 95% confidence intervals. COPD denotes chronic obstructive pulmonary disease, FF fluticasone furoate, UMEC umeclidinium, and VI vilanterol.
Bottom line for ICS in COPD

• ICS should NOT be used as monotherapy in COPD

• Consider ICS in addition to LAMA/LABA for those with moderate-severe COPD and frequent exacerbations

• ICS may benefit those with peripheral eosinophilia (2-4% or >=300 cell/μL) OR sputum eosinophilia (>3%) OR an Asthma-COPD phenotype

• Withdrawal of ICS in COPD is likely safe

Vogelmeier et al. AJRCCM 2017
Bourbeau et al. Canadian Journal sleep, critical care, sleep medicine 2017
Step up (add ICS)

- Moderate to severe COPD on LAMA/LABA still exacerbating
- COPD with features of asthma

Step down (remove ICS)

- Mild or moderate COPD without asthma
- COPD with exacerbations despite ICS and/or adverse effects
Inhaler update

“That’s a puffer. If you want to blow a house down, you’ll also need a huffer.”
What’s new in Smoking cessation

- Very brief intervention (A’s)
- Nicotine replacement plus varenicline
- E-cigarettes
- Smartphone technology

Hartmann-Boyce et al. Cochrane Database of Systematic reviews 2016
What you do matters!

• **Inpatients**
  • 19% of inpts who had a smoking cessation intervention had remained abstinent 6 months post discharge *(BMJ 2013)*

• **Pre-operative clinic**
  • Smoking quit rates pre-operatively are higher than for patients who quit for general health reasons *(Thorac Surg Clin 2012)*
  • Recent data suggests quitting within 2-4 weeks of surgery doesn't have worse outcomes *(Systematic review J anesth 2013)*
AAR: If time is of the essence

**Figure 2**

AAR – Abbreviated Brief Tobacco Intervention (under 2 minutes)

- **ASK**
  Ask about the patient’s tobacco/tobacco-like product use – type, amount, years of use

- **ADVISE**
  Advise patient that stopping tobacco/tobacco-like product use is the best thing they can do for their health/treatment outcomes

- **REFER**
  Refer patient for more intensive intervention on site or within community.
Original Investigation

Efficacy of Varenicline Combined With Nicotine Replacement Therapy vs Varenicline Alone for Smoking Cessation: A Randomized Clinical Trial

Coenraad F. N. Koegelenberg, MD, PhD; Firdows Noor, MD; Eric D. Bateman, MD, PhD; Richard N. van Zyl-Smit, MD, PhD; Axel Bruning, MD; John A. O’Brien, MD; Clifford Smith, MD; Mohamed S. Abdool-Gaffar, MD; Shaunagh Emanuel, MD; Tonya M. Esterhuizen, MSc; Elvis M. Irusen, MD, PhD
## Table 2. Continuous Abstinence and Point Prevalence Abstinence Rates (n = 435)

<table>
<thead>
<tr>
<th>Time Since TQD</th>
<th>Time Period</th>
<th>Per-Protocol Analysis</th>
<th>Multiple Imputation Analysis of Main Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Varenicline and Active Nicotine Patch (n = 216)</td>
<td>Varenicline and Placebo Patch (n = 219)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
</tr>
<tr>
<td>Continuous Abstinence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 wk</td>
<td>Weeks 5-8</td>
<td>96 (44.4)</td>
<td>76 (34.7)</td>
</tr>
<tr>
<td>12 wk</td>
<td>Weeks 9-12</td>
<td>99 (45.8)</td>
<td>70 (32.0)</td>
</tr>
<tr>
<td>16 wk</td>
<td>Weeks 9-16</td>
<td>84 (38.9)</td>
<td>56 (25.3)</td>
</tr>
<tr>
<td>24 wk</td>
<td>Weeks 9-24</td>
<td>71 (32.9)</td>
<td>42 (19.2)</td>
</tr>
</tbody>
</table>

### Point Prevalence Abstinence Rates

<table>
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<th>Time Since TQD</th>
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<tr>
<td></td>
<td></td>
<td>No. (%)</td>
<td>No. (%)</td>
</tr>
<tr>
<td>1 wk</td>
<td>Week 1</td>
<td>69 (31.9)</td>
<td>61 (27.9)</td>
</tr>
<tr>
<td>2 wk</td>
<td>Week 2</td>
<td>98 (45.4)</td>
<td>95 (43.4)</td>
</tr>
<tr>
<td>4 wk</td>
<td>Week 4</td>
<td>110 (50.9)</td>
<td>87 (39.7)</td>
</tr>
<tr>
<td>8 wk</td>
<td>Week 8</td>
<td>109 (50.5)</td>
<td>96 (43.8)</td>
</tr>
<tr>
<td>12 wk</td>
<td>Week 12</td>
<td>116 (53.7)</td>
<td>87 (39.7)</td>
</tr>
<tr>
<td>16 wk</td>
<td>Week 16</td>
<td>104 (48.1)</td>
<td>81 (37.0)</td>
</tr>
<tr>
<td>24 wk</td>
<td>Week 24</td>
<td>94 (43.5)</td>
<td>63 (28.8)</td>
</tr>
</tbody>
</table>

Abbreviations: OR, odds ratio; TQD, target quit date.

* Calculated mean proportional values (numbers rounded) derived from data of participants who completed follow-up to 12 and 24 weeks, respectively, and, to account for missing data, 5 sets of imputed values for the participants who did not attend their 12- and 24-week follow-up visits (Figure). Data for 2 participants (in the placebo group) were insufficient to perform the multiple imputation analysis at 24 weeks.

** n = 219 at 12 wk and n = 217 at 24 wk.
E-cigarettes: Jury is still out

- E-cigarettes with nicotine likely more effective than E-cig alone
- Fewer toxicants than cigarettes (Tob Con 2014)
- Still no proof of longterm safety
  - May alter gene expression (Clin Cancer Res 2014)
  - May be toxic to alveolar macrophages (Thorax 2018)
- Nicotine in E-cigarettes soon to be legal in Canada

Smoking Cessation Apps

2MorrowQuit (was SmartQuit)
2Morrow, Inc

Smokerface - Quit Smoking
Titus Brinker

SmokefreeTXT: Cravings are tough, but you can do this! Avoid big triggers for now & focus on beating smaller ones. Practice makes perfect!

SmokefreeTXT: Even the strongest cravings go away on their own in a few. Distract yourself for 10 & see what happens. If they are still there try another 10.
How to reduce John’s readmissions?

- Pulmonary rehabilitation (< 4 weeks of AECOPD) (1C)
- Written action plan + case management (2B) - INSPIRED
- Pharmacologic therapies

Criner et al. CHEST 2015
### Table 2. Six- and 12-months results pre/post-INSPIRED for ED visits, hospital admissions and length of stay (LOS) (n=93)*

<table>
<thead>
<tr>
<th></th>
<th>Pre-INSPIRED</th>
<th>Post-INSPIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12 months</td>
<td>6-12 months</td>
</tr>
<tr>
<td>ED visits</td>
<td>266</td>
<td>71</td>
</tr>
<tr>
<td>Admissions</td>
<td>136</td>
<td>21</td>
</tr>
<tr>
<td>LOS (days)</td>
<td>1333</td>
<td>202</td>
</tr>
</tbody>
</table>

*To provide a homogeneous group for this analysis we excluded patients who did not see the spiritual care practitioner, did not have an ED visit or admission in the year prior to INSPIRED, those who died, or went to a nursing home or long-term care facility within 6-months of starting INSPIRED, and those who live outside the catchment.
TABLE 3. How INSPIRED helps: top five patient-reported reasons, with illustrative quotes, post-INSPIRED

<table>
<thead>
<tr>
<th></th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Action plan and prescriptions on-hand or on-order</td>
</tr>
<tr>
<td>2</td>
<td>Accessible education, information and resources</td>
</tr>
<tr>
<td>3</td>
<td>Improved outcomes relevant to patient and family, for example, less breathlessness, more stamina, recognition and management of COPD, use of medications</td>
</tr>
<tr>
<td>4</td>
<td>Someone to call for guidance and support; and not feeling so alone and abandoned</td>
</tr>
<tr>
<td>5</td>
<td>Feeling cared for by caring, reliable, knowledgeable staff using effective communication</td>
</tr>
</tbody>
</table>

“I used to feel so alone with my illness. Now people check on me and I know there’s someone I can call if I’m having a problem. I would feel so isolated, frustrated and apprehensive without this support.”

INSPIRED patient

“There were times when panic was setting in... It was a tremendous relief to know that I wasn’t alone and that there was someone who cared that I could turn to... You handled Mum with such dignity and respect that I can never thank you enough!”

INSPIRED family caregiver

This is to tell me how I will take care of myself when I have a COPD flare-up.

My goals are ____________________________________________

My support contacts are __________________________________ and __________________________________

<table>
<thead>
<tr>
<th>My Symptoms</th>
<th>I Feel Well</th>
<th>I Feel Worse</th>
<th>I Feel Much Worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>I have sputum.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>My usual sputum colour is:</td>
<td></td>
<td>Changes in my sputum, for at least 2 days.</td>
<td></td>
</tr>
<tr>
<td>I feel short of breath.</td>
<td></td>
<td>More short of breath than usual for at least 2 days.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>My Actions</th>
<th>Take Action</th>
<th>Call For Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>I use my daily puffers as directed.</td>
<td>If I checked “Yes” to one or both of the above, I use my prescriptions for COPD flare-ups.</td>
<td>I will call my support contact and/or see my doctor and/or go to the nearest emergency department.</td>
</tr>
<tr>
<td>If I am on oxygen, I use _____ L/min.</td>
<td>I use my daily puffers as usual. If I am more short of breath than usual, I will take ___ puffs of ___ up to a maximum of ___ times per day.</td>
<td>I will dial 911.</td>
</tr>
</tbody>
</table>

Notes:

Important information: I will tell my doctor, respiratory educator, or case manager within 2 days if I had to use any of my flare-up prescriptions. I will also make follow-up appointments to review my COPD Action Plan twice a year.

Outline

1. Highlights of the 2017 COPD guidelines
   - What’s with inhaled corticosteroids in COPD?
   - Inhaler review
2. Update on smoking cessation
3. INSPIRED™ and other ways to reduce hospitalizations in COPD
Thank you!
Resources


https://www.albertaquits.ca/

https://www.livingwellwithcopd.com/3-39-user-tool-how-to-use-my-inhaler-properly-.html

www.resptrec.org