COPD for the Hospitalist

Northwest Hospital Medicine Conference

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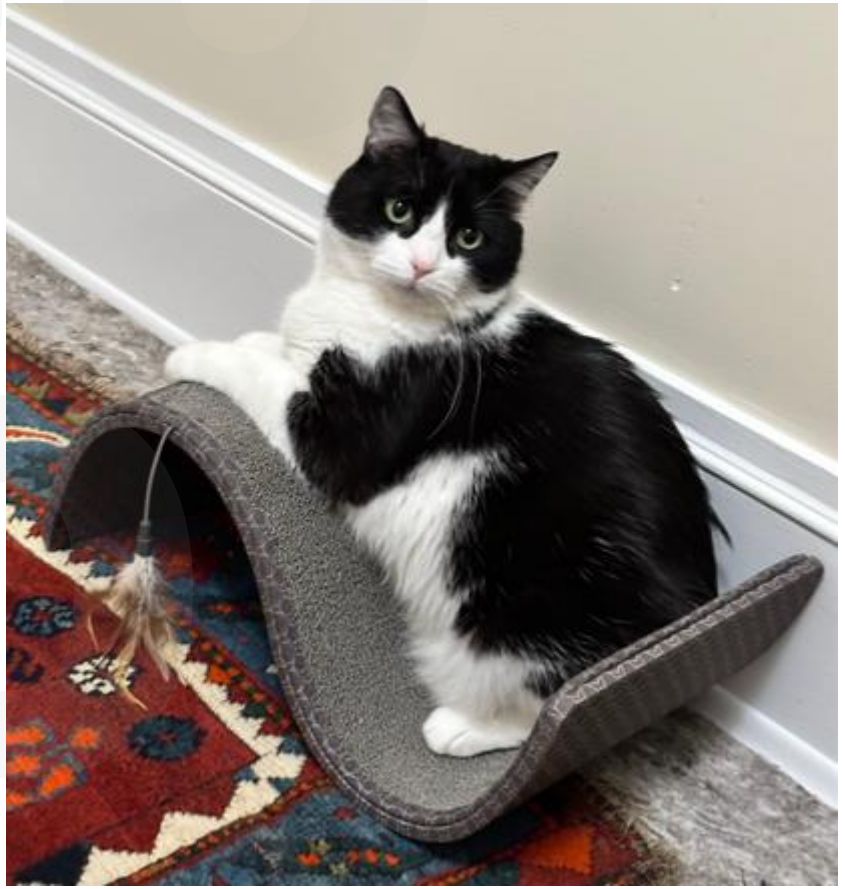
Disclosures

- I have no disclosures

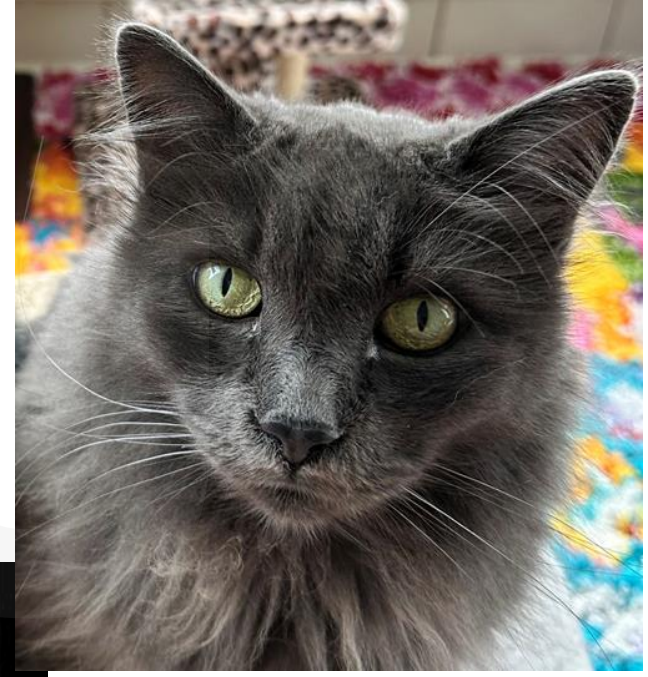
Objectives

- Review the mainstays of management
- Practical application of the evidence and therapies
- Discuss exceptions to the rules as we go
  - Please ask questions!



Case: Mr. Gus

78 year-old man with a 50 pack-year tobacco use history, active 1 PPD. Last FEV1 2021 39%. Presents to your ED with 5 days of increased dyspnea on exertion, cough and sputum production.



Diagnosis?

Definitions: COPD

- heterogenous lung condition characterized by chronic respiratory symptoms

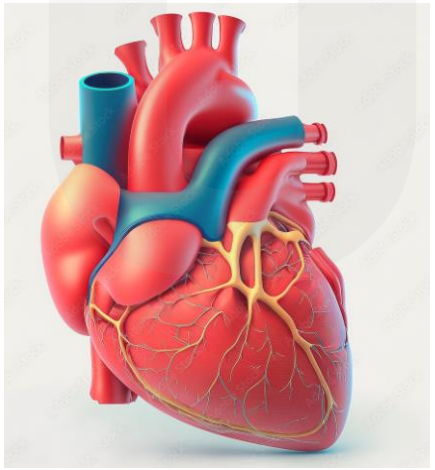
  dyspnea, cough, sputum production, and/or exacerbations

- due to abnormalities of the airways (bronchitis, bronchiolitis) and/or alveoli (emphysema)

- that cause persistent, often progressive, airflow obstruction

Definitions: COPD exacerbation

- Cough: increased frequency and/or increased severity
- Sputum production: increase in volume and/or change in characteristics
- Dyspnea: more than baseline or more with less activity



tachycardia

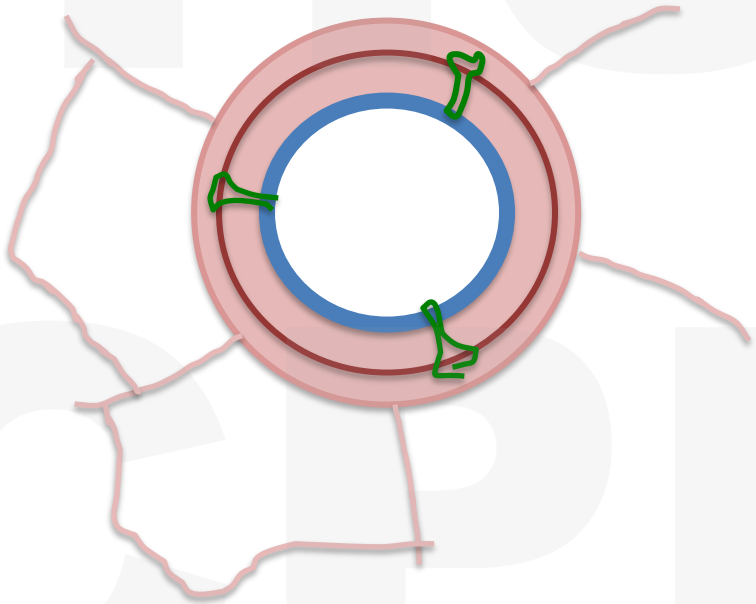
tachypnea

hypoxemia

hypercapnia

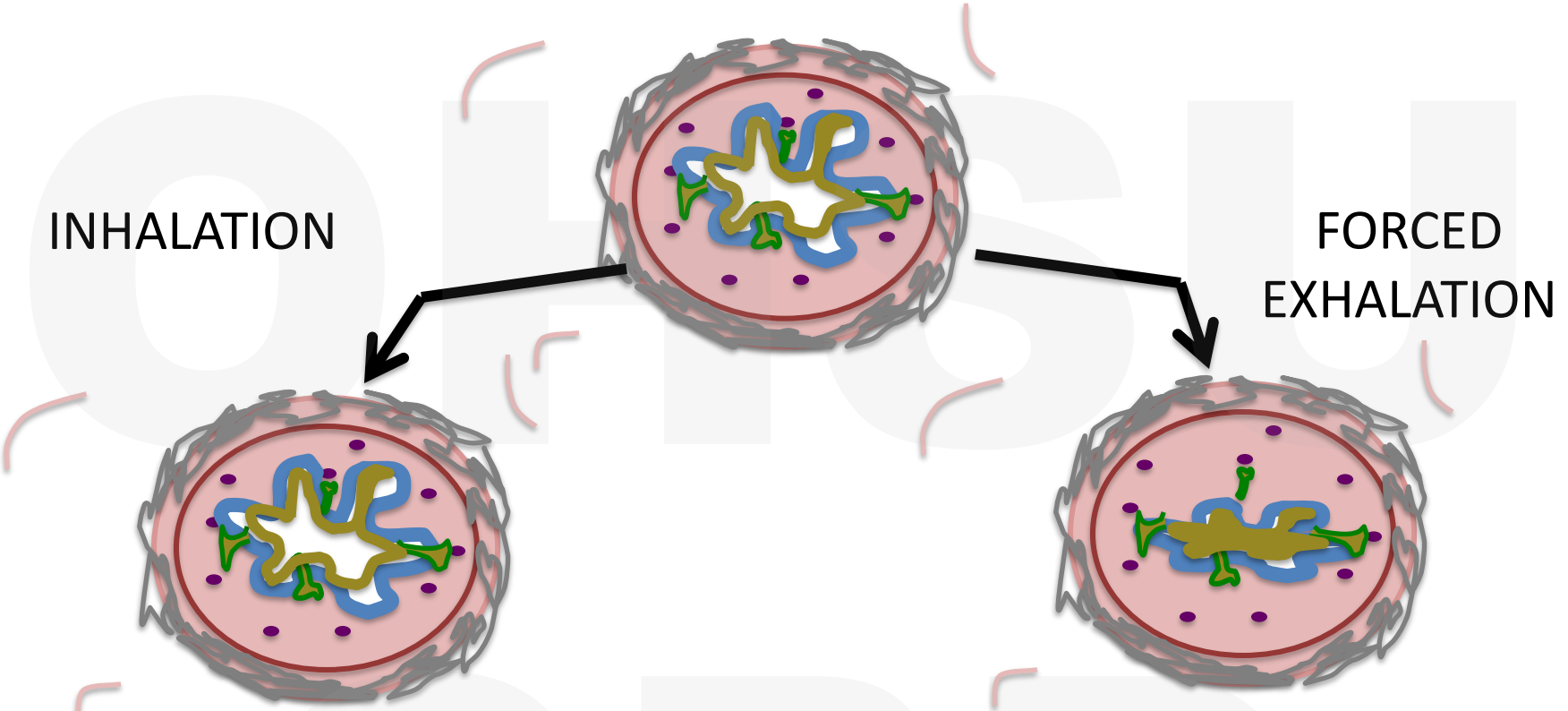
Normal Small Airway

NORMAL



Katie Artis, MD
2025

COPD



AIRFLOW LIMITATION

AIR TRAPPING

IMPAIRED GAS EXCHANGE

MUCUS HYPERSECRETION

Katie Artis, MD
2025

Mr. Gus

- 78 year-old man with a 50 pack-year tobacco use history, active 1 PPD. Last FEV1 2021 39%. Presents to your ED with 5 days of increased dyspnea on exertion, cough and sputum production.

RR 26 O2 Sat 87% 3L NC HR 103

WBC: 15k

RSV+

Management

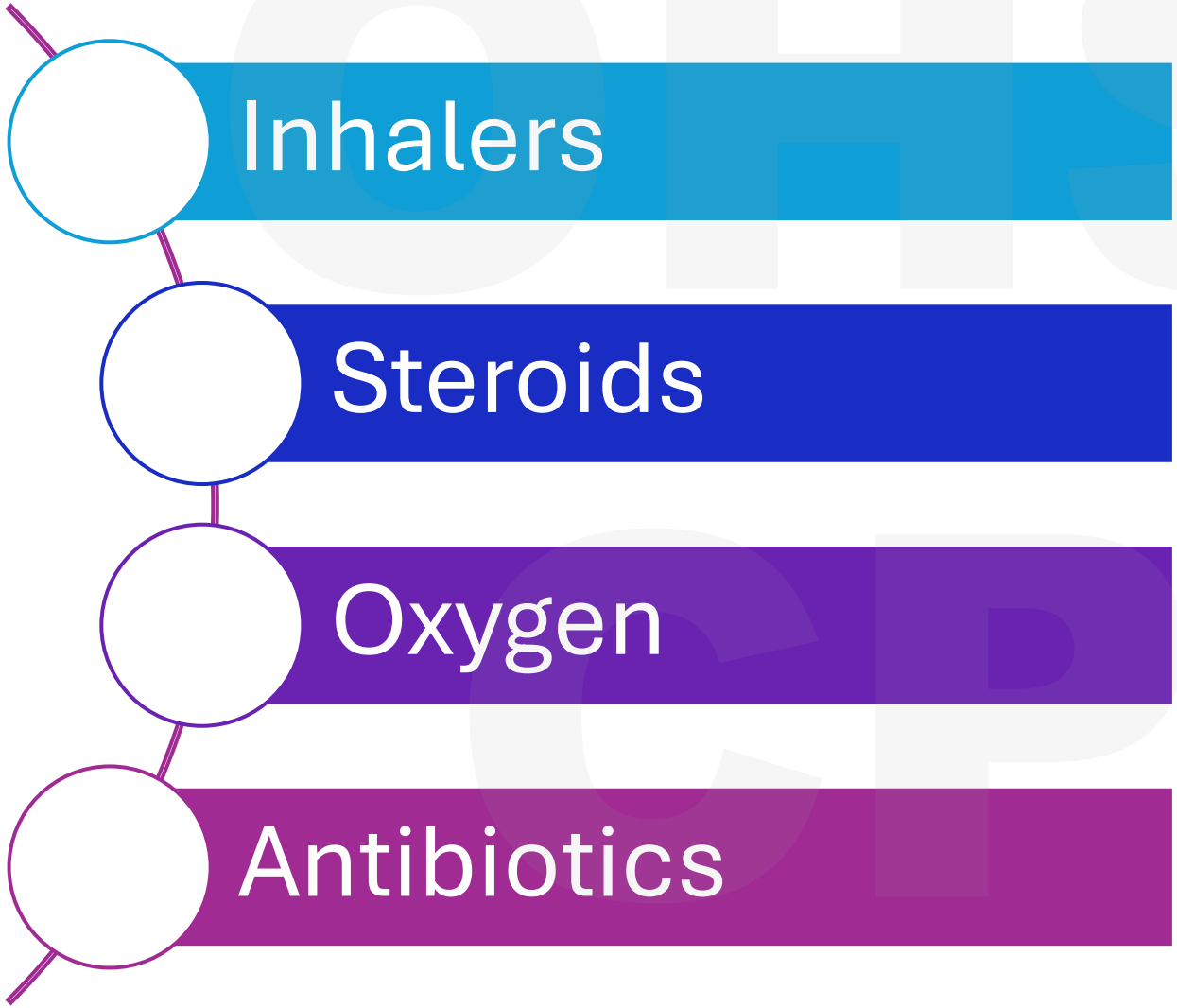
OUTPATIENT

INPATIENT

Inpatient Management

- Inhalers
- Steroids
- Oxygen
- Antibiotics

Inpatient Management



Identify precipitating factors

- Viral illness
- Bacterial illness/pneumonia
- Environmental exposure
- Comorbid processes: ACS, pneumothorax, sepsis

Consider alternative etiologies

- Heart failure
- Pulmonary embolism
- Different pulmonary disease (ILD)
- Pulmonary hypertension

Inhaled therapies

- Nebulized albuterol 2.5mg in 3mL
  - In the ED or upon arrival: 3-4 back to back
  - Every 2-4 hours prn (if severe, standing)

- Duonebs: albuterol/ipratropium nebulizers standing every 4-6 hours

- Home inhalers: HOLD until respiratory status improves
  - Why? Respiratory mechanics/obstruction

Inhaled therapies

- Airway clearance:
  - Flutter valve QID and prn (or Acapella, or whatever chest physiotherapy is available)
  - AVOID Incentive spirometry (worsening air trapping)
  - Hypertonic saline:
    - Always start with low concentrations, only for significant secretion burden
    - With caution
    - And with a stop date

Steroids

- When to give IV glucocorticoids?
  - Initial dose: methylprednisolone 60-125mg in the ED
  - Inability to tolerate PO
  - Questionable oral absorption (shock)
  - Subsequent doses: 60mg every 6-12 hours** (or straight to PO)

- Otherwise, give PO
  - Serum levels achieved within an hour
  - No significant difference IV vs PO
  - Dose: prednisone 40mg PO x 5 days (total)

Walters et al 2014
Luppi et al 2013

Steroids

- Who needs higher doses?
- Prove it

Back to Mr. Gus

RR 26 O2 Sat 87% 3L NC HR 103

RSV+

After a few hours:

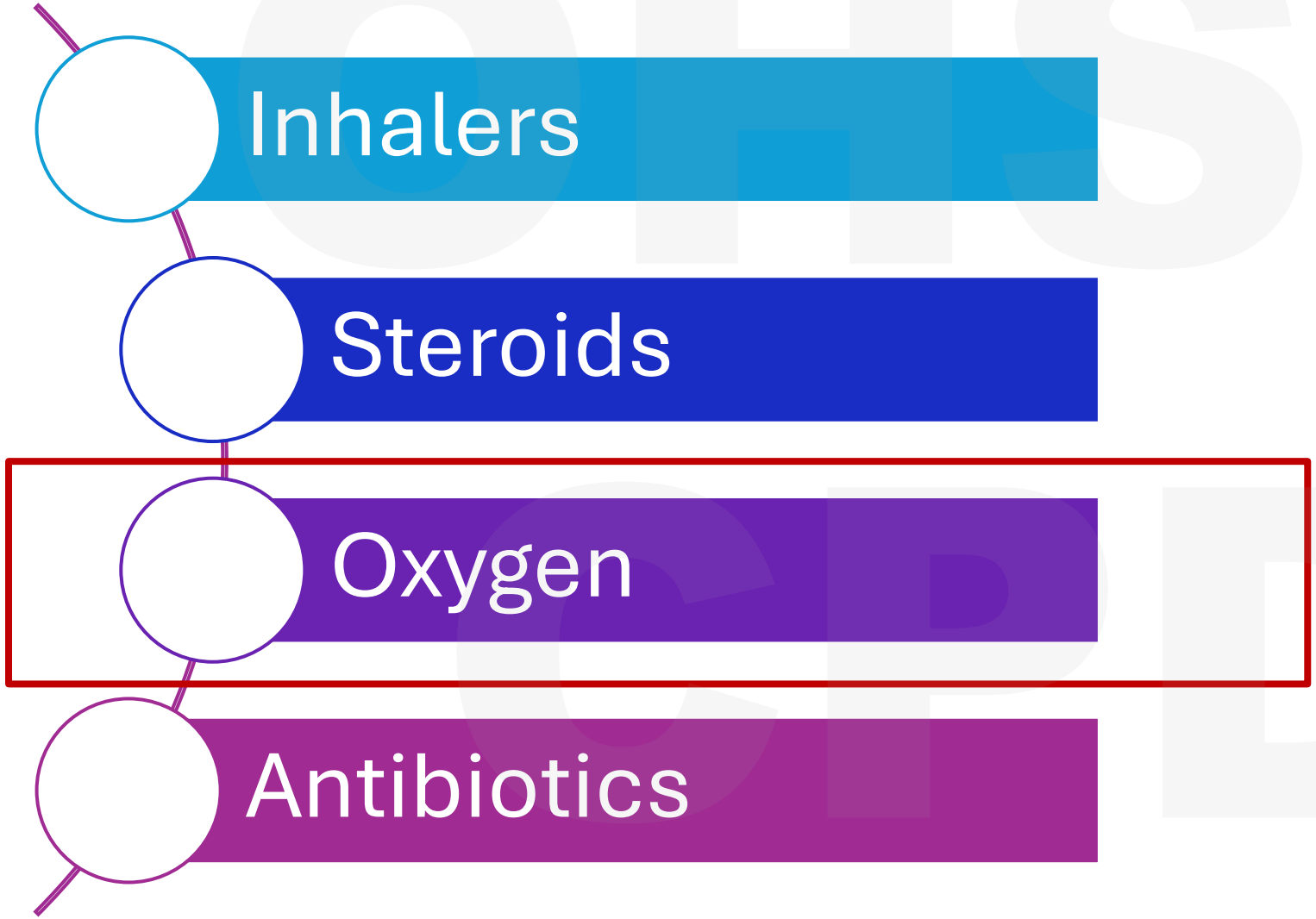
RR 32 HR 120s

O2 sat 90% 10L non-rebreather

Speaking 2-3 words at a time

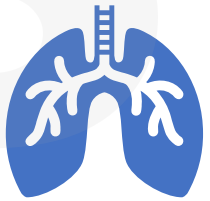
Venous blood gas: pH 7.27/58

Inpatient Management



Oxygen & Respiratory Devices

- Low flow devices
  - Good for moderate exacerbations
  - Simple oxygen supplementation
  - Minimal hypercapnia



Regular nasal cannula (low flow) – max 15 LPM

Tachypneic/dyspneic patient needs more

At 15 LPM: 15 LPM + entrained air from environment

- Heated High Flow Nasal Cannula (HFNC)

Match inspiratory flow rates with high delivery rates

Deliver constant FiO2

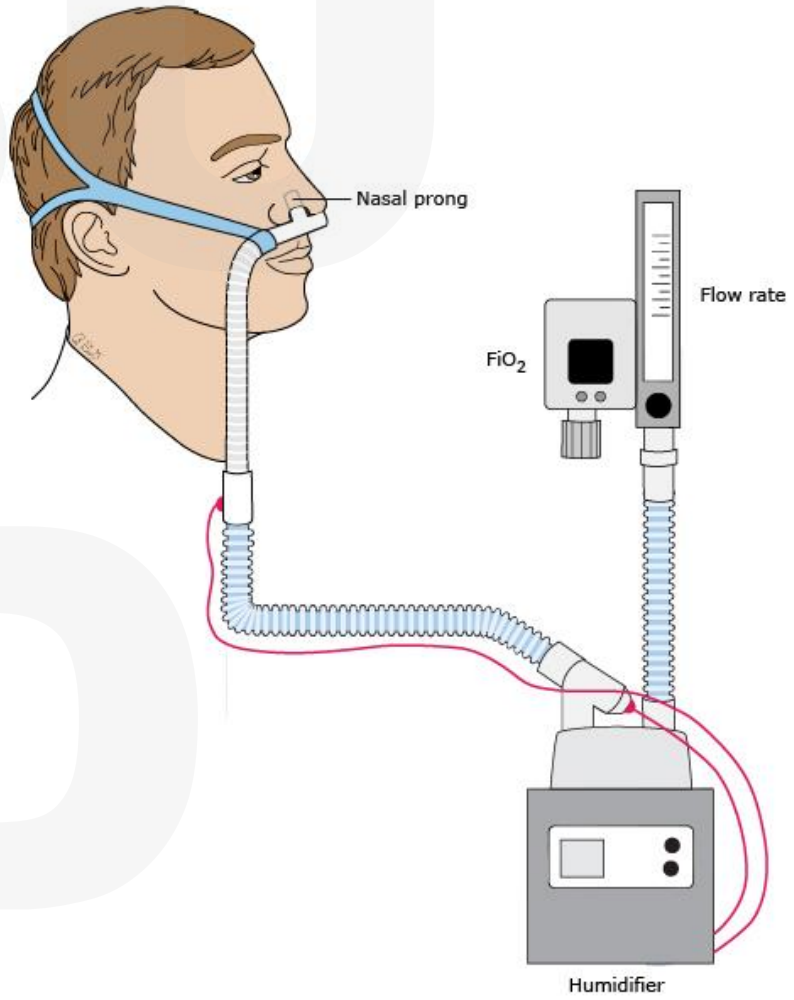
Oxygen & Respiratory Devices

- HFNC:
  - Dead space washout: rapid flow rate improves ventilation
  - Enhances O2 delivery
  - Better gas exchange == less dyspnea

Titrate separately:

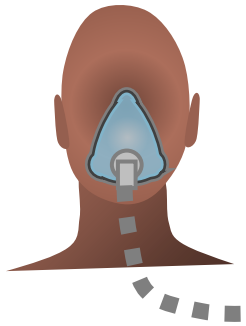
Flow rate

FiO2

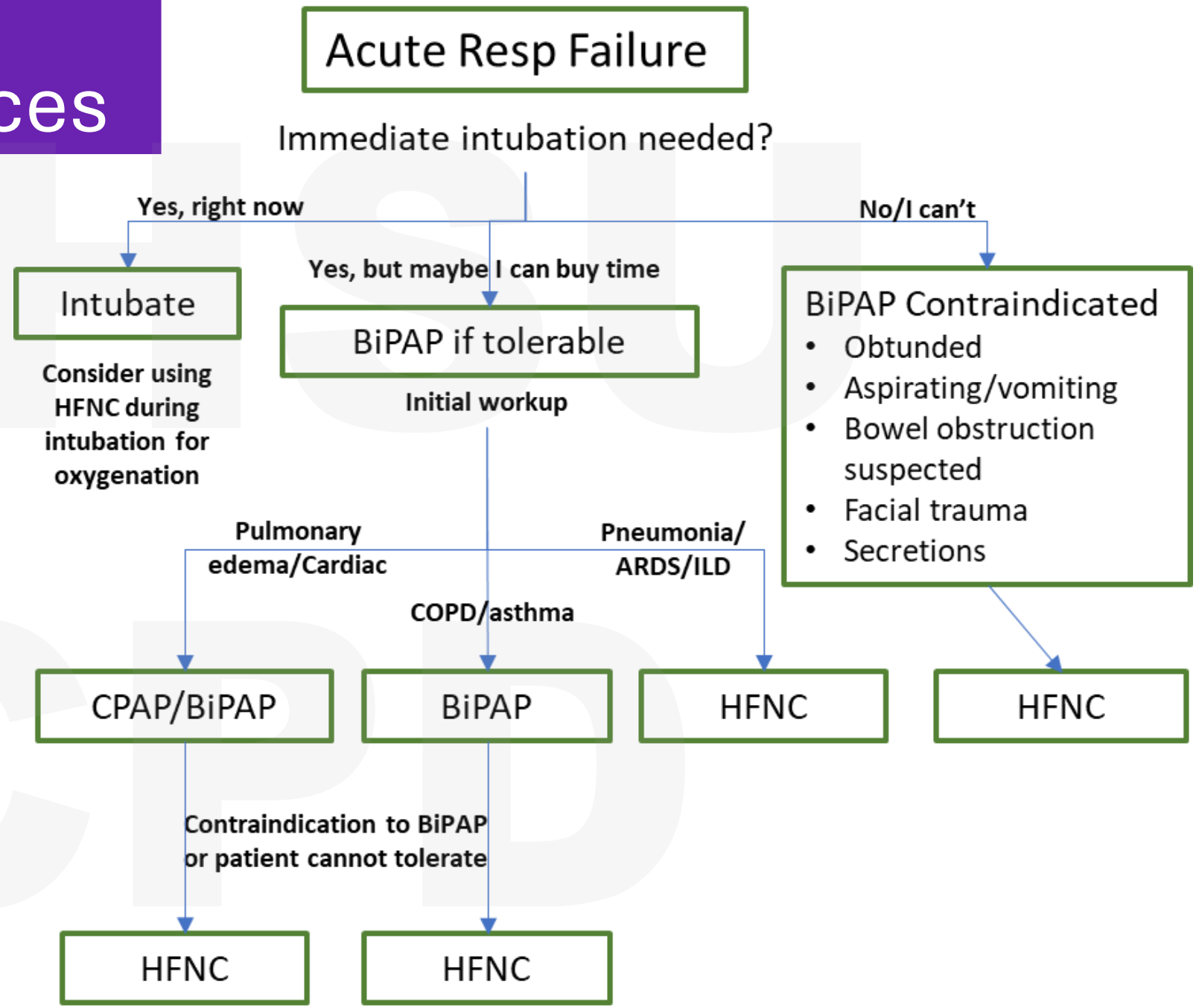


Oxygen & Respiratory Devices

- Bilevel/BiPAP/Spontaneous Timed (S/T)
  - Set inspiratory (IPAP) and expiratory (EPAP) pressure.
  - Every breath is patient-triggered, and is supported with positive pressure
  - Improves gas exchange, oxygenation
  - Can help avoid intubation in COPD, decrease mortality
  - Can cause volutrauma: keep an eye on tidal volumes and patient response



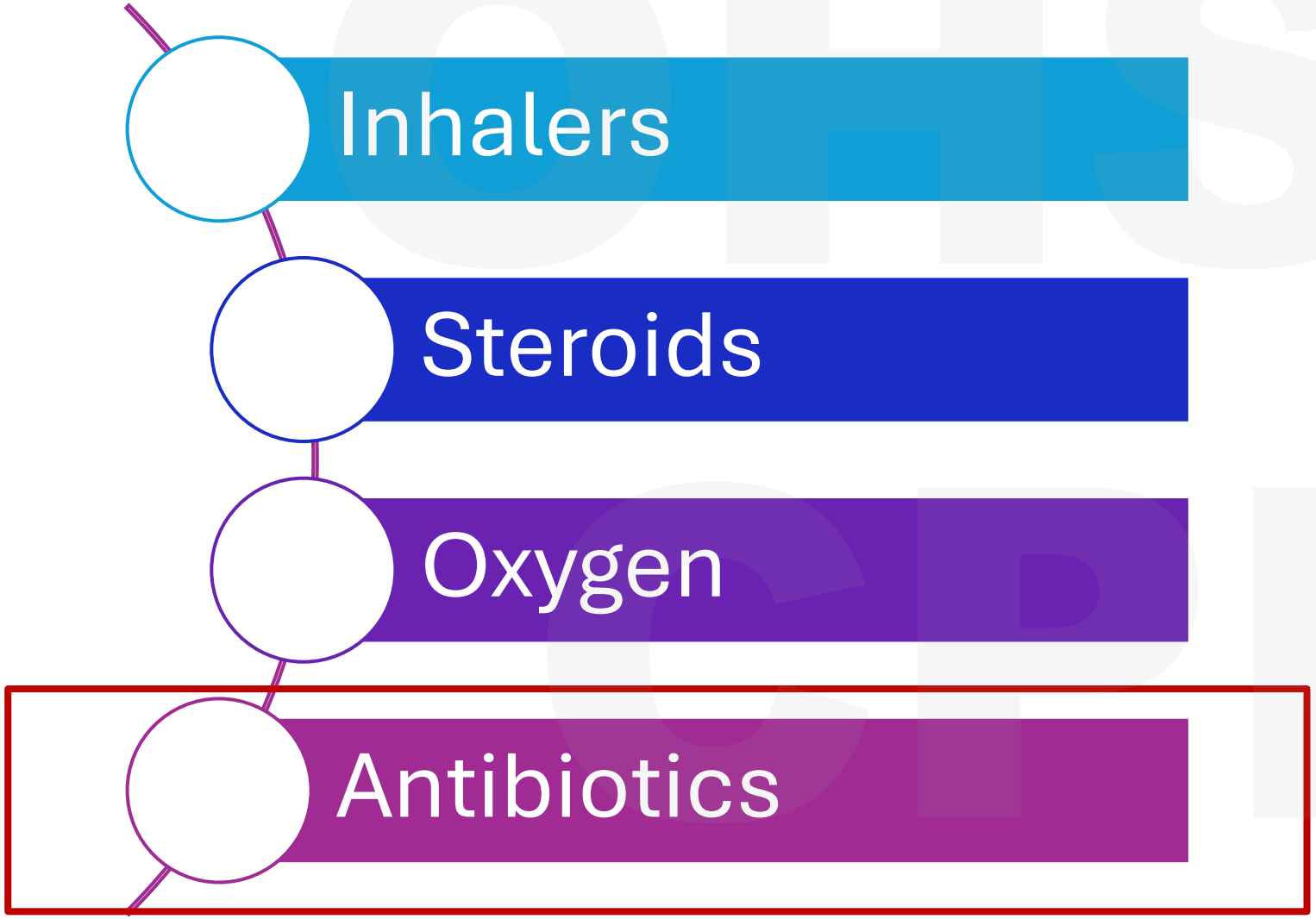
Oxygen & Respiratory Devices



Weaning/Discontinuation

- WOB improved? Titrate down flow
- 20LPM/50% FiO2 or 30LPM/30% FiO2 approx. 6LPM nasal cannula
- 6LPM can provide 40-50% FiO2
- Patients may be ready sooner than you think

Inpatient Management



Antibiotics

- Sputum culture if at all possible!
- Atypical coverage: azithromycin, or doxycycline
- Ceftriaxone (or levofloxacin/moxifloxacin)

Consider risk factors: colonization, bronchiectasis, frequent exacerbations with hospitalizations, chronic steroid use

- Cefepime or ceftazidime or piperacillin-tazobactam

Antibiotics

- Anticipate *some* improvement within 48-72 hours
- If not:

Antibiotics

- Anticipate *some* improvement within 48-72 hours
- If not: did I make the right diagnosis?

Consider alternative etiologies

- Heart failure
- Pulmonary embolism
- Different pulmonary disease (ILD)
- Pulmonary hypertension
- Resistant bacteria
- Pulmonary abscess
- Pleural effusion
- ACS
- Pneumothorax
- sepsis

Inpatient Management

- Inhalers
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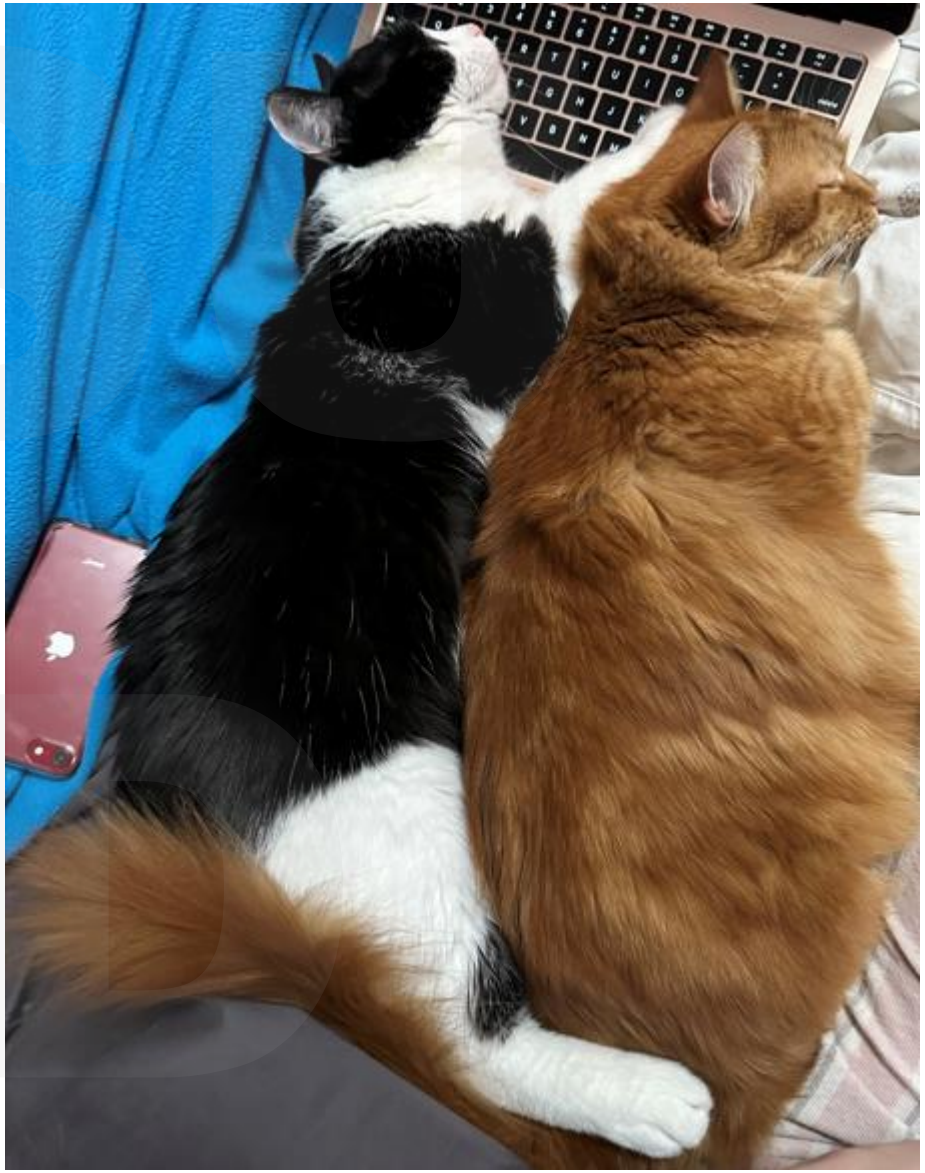
- Oxygen
- Antibiotics



Inpatient Management: Approaching discharge

- Inhaler Teaching & Package
- Pulmonary Rehab/Physical Activity
- Nutrition
- Smoking Cessation/exposure avoidance
- Vaccines
- Palliative Care

Inhaler Teaching & Home Package

DPI

(Dry Powder Inhaler)

NO SPACER

MDI

(Metered Dose Inhaler)

YES SPACER!

SMI

(Soft Mist Inhaler)

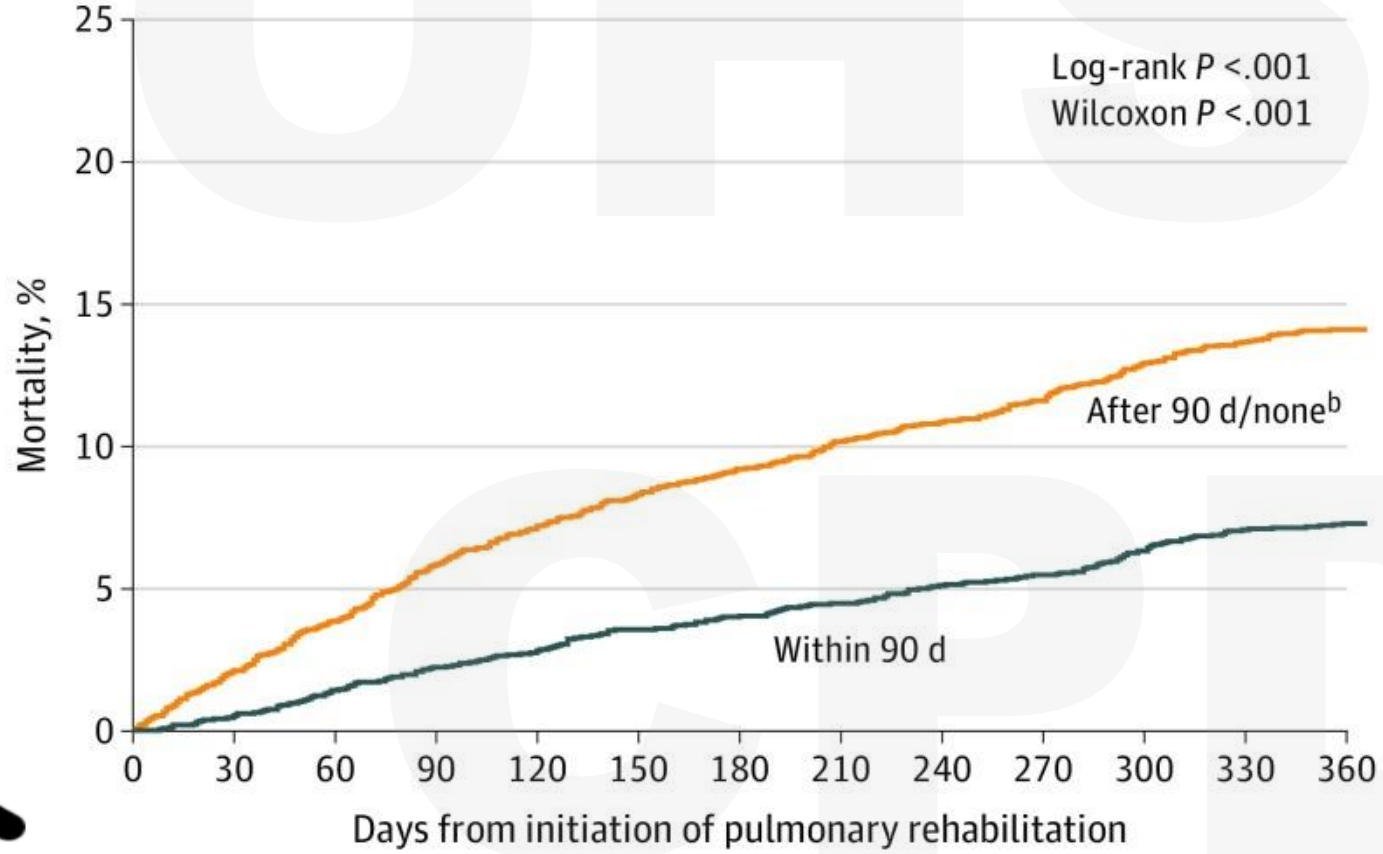
NO SPACER

Inhaler Teaching & Home Package

- Respiratory therapist: can work with patients on inhaler technique
  - Can let you know if their home inhalers are likely (or unlikely) to be used optimally
- Metered Dose (MDI) or Soft Mist (SMI) largely preferred to patients with severe obstructive lung disease
- Long-acting anti muscarinic and long-acting beta agonist for everyone (LAMA/LABA)

- If bacterial pneumonia and NO eosinophils, would avoid ICS on discharge depending on # admissions, severity of disease

Timely PR after COPD Hospitalization Reduces Mortality



Mortality reduction in smaller RCTs[1] corroborated by large population level data[2]

Post-discharge PR timing
[1] within 4 weeks
[2] within 3 months

1. Ryrsø et al (2018); BMC Pulmonary Medicine
2. Lindenauer et al (2020); JAMA

Nutrition

- Utilize nutrition/dietician consultation
- Speech language pathology: dysphagia and aspiration
- Social work for resources

Smoking Cessation/exposure avoidance

- Opportunity for behavior modification
- Nicotine replacement
- Resources on discharge

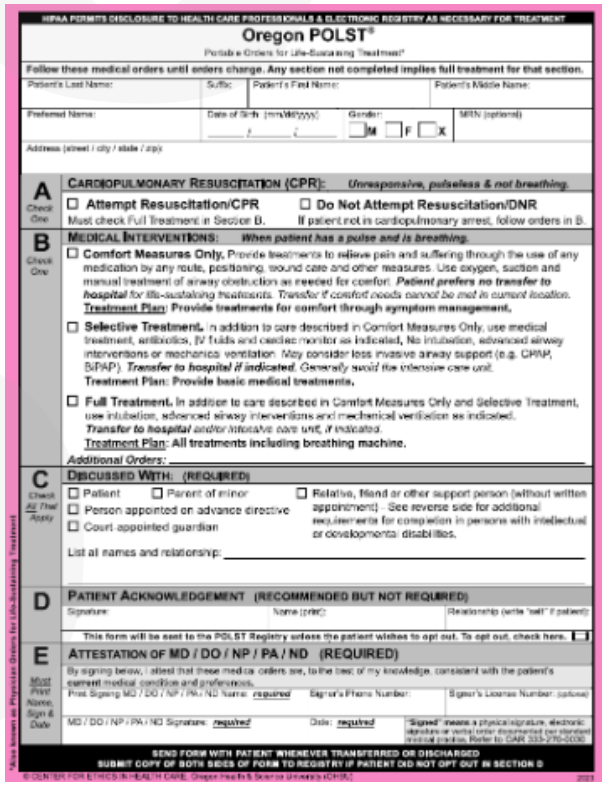
Vaccines

- Influenza
- COVID-19
- RSV
- Pneumococcal
- Tdap
- VZV

Palliative Care

- For end-stage COPD (with caution)

POLST



HIPAA PERMITS DISCLOSURE TO HEALTH CARE PROFESSIONALS & ELECTRONIC REGISTRY AS NECESSARY FOR TREATMENT

Oregon POLST®

Portable Orders for Life-Sustaining Treatment

Follow these medical orders until orders change. Any section not completed implies full treatment for that section.

Patient's Last Name: | Suffix: | Patient's First Name: | Patient's Middle Name:

Preferred Name: | Date of Birth (mm/dd/yyyy): | Gender: ☐M ☐F ☐X | MRN (optional)

Address (street / city / state / zip):

A Check One — **CARDIOPULMONARY RESUSCITATION (CPR):** *Unresponsive, pulseless & not breathing.*

☐ **Attempt Resuscitation/CPR** — Must check Full Treatment in Section B.

☐ **Do Not Attempt Resuscitation/DNR** — If patient not in cardiopulmonary arrest, follow orders in B.

B Check One — **MEDICAL INTERVENTIONS:** *When patient has a pulse and is breathing.*

☐ **Comfort Measures Only.** Provide treatments to relieve pain and suffering through the use of any medication by any route, positioning, wound care and other measures. Use oxygen, suction and manual treatment of airway obstruction as needed for comfort. ***Patient prefers no transfer to hospital*** for life-sustaining treatments. *Transfer if comfort needs cannot be met in current location.*
Treatment Plan: Provide treatments for comfort through symptom management.

☐ **Selective Treatment.** In addition to care described in Comfort Measures Only, use medical treatment, antibiotics, IV fluids and cardiac monitor as indicated, No intubation, advanced airway interventions or mechanical ventilation. May consider less invasive airway support (e.g. CPAP, BiPAP). ***Transfer to hospital if indicated.*** *Generally avoid the intensive care unit.*
Treatment Plan: Provide basic medical treatments.

☐ **Full Treatment.** In addition to care described in Comfort Measures Only and Selective Treatment, use intubation, advanced airway interventions and mechanical ventilation as indicated.
Transfer to hospital *and/or intensive care unit, if indicated.*
Treatment Plan: All treatments including breathing machine.

Additional Orders: _____

C Check All That Apply — **DISCUSSED WITH: (REQUIRED)**

☐ Patient ☐ Parent of minor ☐ Relative, friend or other support person (without written appointment). See reverse side for additional requirements for completion in persons with intellectual or developmental disabilities.
☐ Person appointed on advance directive
☐ Court appointed guardian

List all names and relationship: _____

D — **PATIENT ACKNOWLEDGEMENT (RECOMMENDED BUT NOT REQUIRED)**

Signature: | Name (print): | Relationship (write "self" if patient)

This form will be sent to the POLST Registry unless the patient wishes to opt out. To opt out, check here. ☐

E Must Print Name, Sign & Date — **ATTESTATION OF MD / DO / NP / PA / ND (REQUIRED)**

By signing below, I attest that these medical orders are, to the best of my knowledge, consistent with the patient's current medical condition and preferences.

Print Signing MD / DO / NP / PA / ND Name: *required* | Signer's Phone Number: | Signer's License Number: (optional)

MD / DO / NP / PA / ND Signature: *required* | Date: *required* | "Signed" means a physical signature, electronic signature or verbal order documented per standard medical practice. Refer to OAR 333-270-0030.

SEND FORM WITH PATIENT WHENEVER TRANSFERRED OR DISCHARGED
SUBMIT COPY OF BOTH SIDES OF FORM TO REGISTRY IF PATIENT DID NOT OPT OUT IN SECTION D

Voice Based on Physician Orders for Life-Sustaining Treatment

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Oxygen: For Discharge

- **Long-term oxygen:**

Resting hypoxemia, SpO2≤88%
Exertional desaturation, SpO2 <80%
(NOTT trial 1980, MRC trial 1981)
15 hrs/day non-inferior to 24hrs/day
(NEJM 2024)

Decreased mortality but no decrease in exacerbations

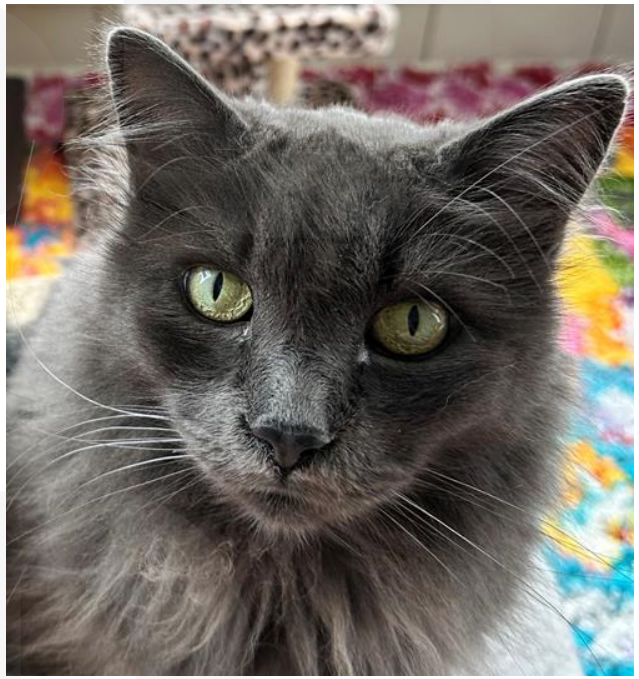
Resting SpO2 89-93%
Exertional desaturation, SpO2 <90% but ≥80%
(LOTT trial, NEJM 2016)

NO proven benefits!

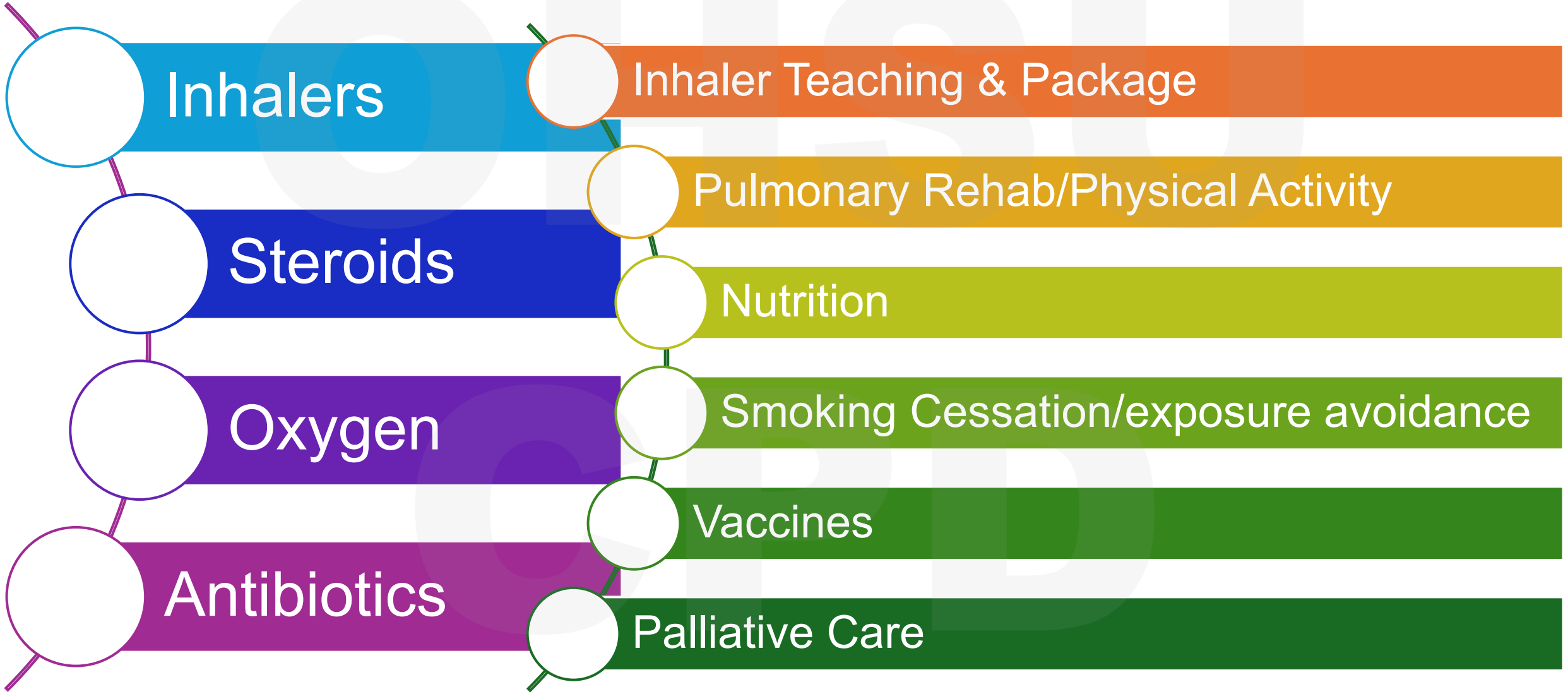
Mr. Gus

- He is feeling better and wants to see a lung doctor when he leaves the hospital

- Should he see a pulmonologist during this admission?



Summary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Questions?

Thank you!