Palliative Care in Advanced Lung Cancer
"Too Much Fluid – Too Little Air"

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Faculty/Presenter Disclosure

- **Faculty: Cornelius Woelk MD,CCFP(PC),FCFP**

- **Relationships with commercial interests:**
  - **Grants/Research Support: NONE**
  - **Speakers Bureau/Honoraria: NONE**
  - **Consulting Fees: NONE**
  - **Other: NONE**

Mitigating Potential Bias

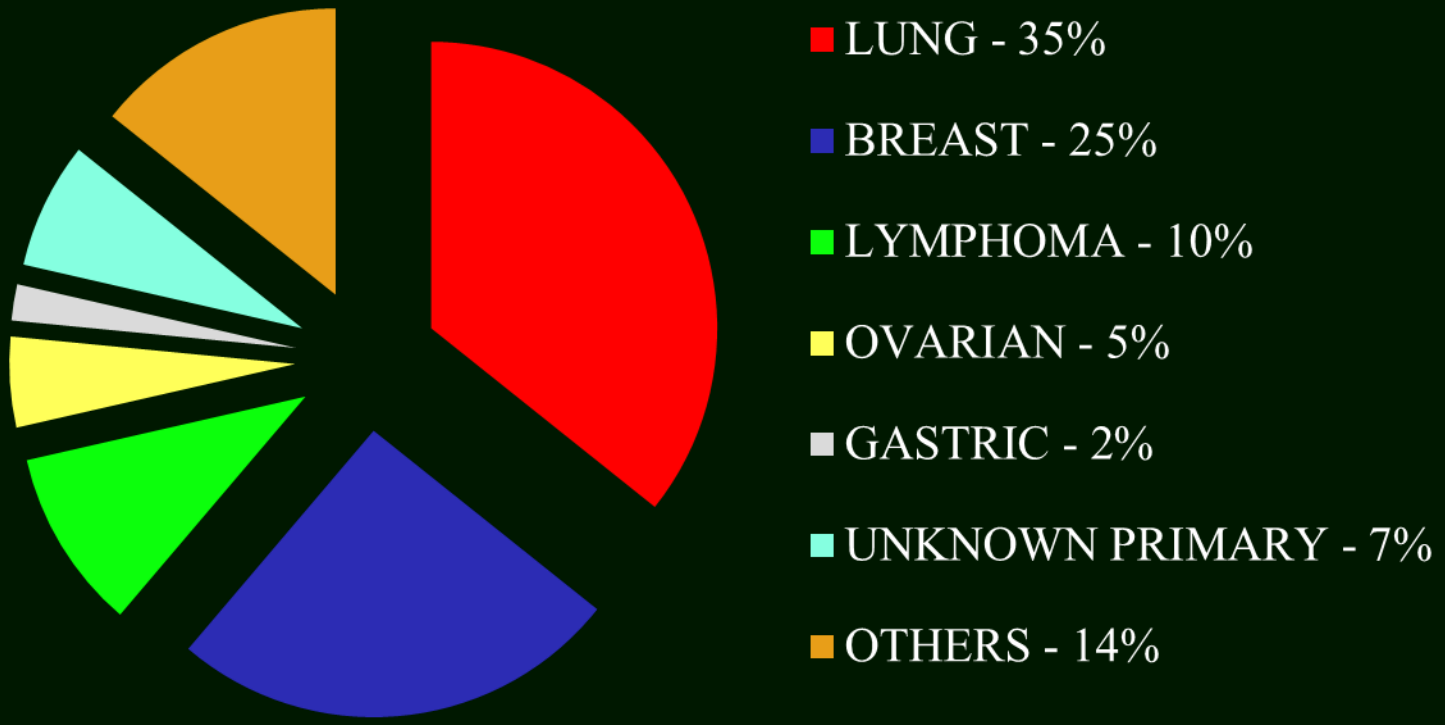
Not applicable

Specific Learning Objectives

At the end of this session, participants will:

- Name four approaches to the management of a pleural effusion
- Manage dyspnea more effectively
- Understand the importance of the non-intervention option

Malignant Pleural Effusion
Etiology

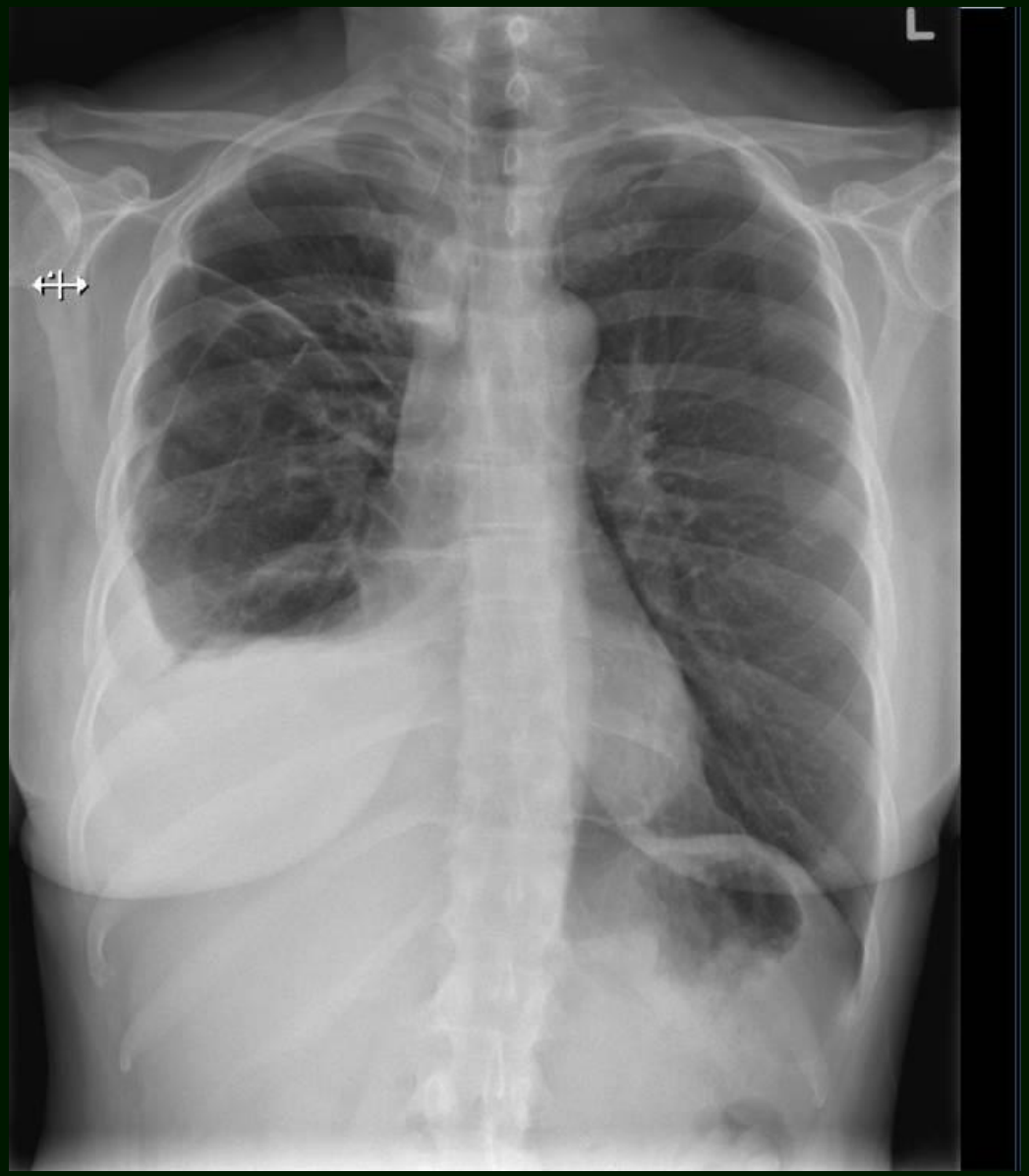


Ms. B

- 68 year old female with known NSCLC.
- She has been on Crizotinib for 2 months
- Presents with recent increased cough, more dyspnea on exertion, and fatigue.
- She has poor air entry in her right lower lung, and is sent for a CXR.

Ms. B

Should this effusion be drained?

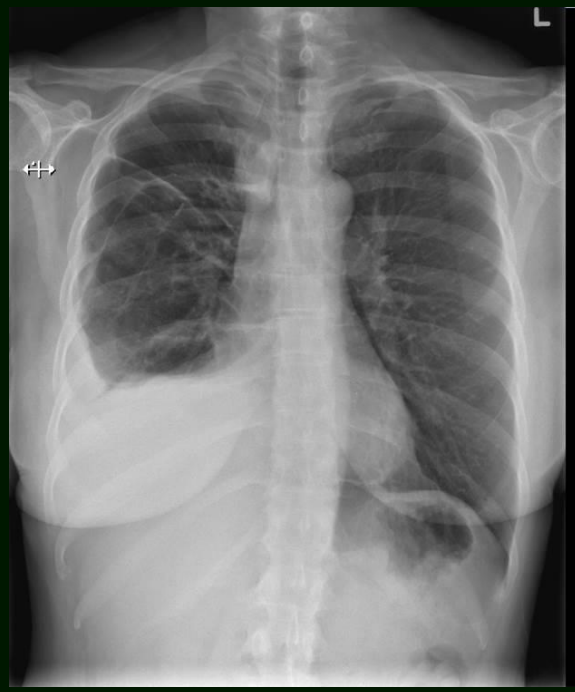


Ms. B

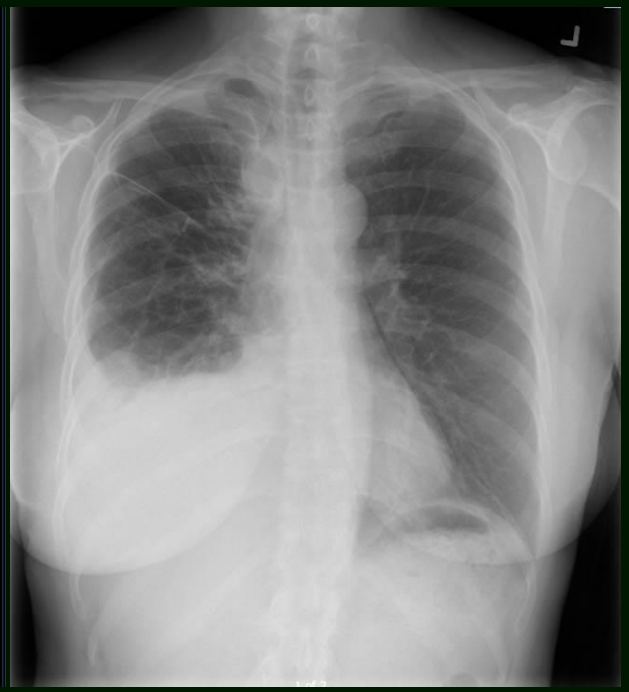
TODAY

6 WEEKS AGO

Ms. B



TODAY



6 WEEKS AGO

3 MONTHS AGO

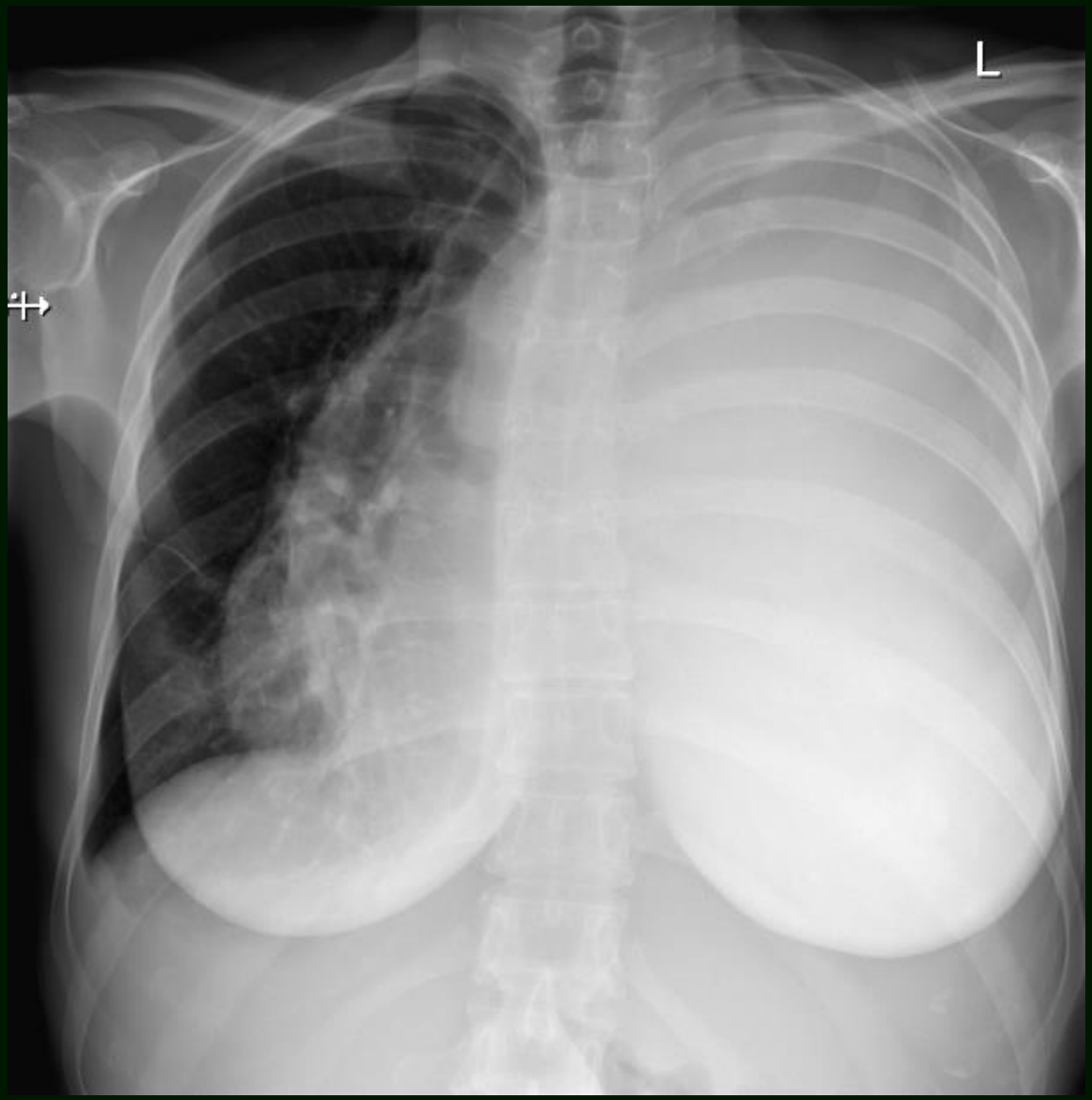
Malignant Pleural Effusion
Clinical Manifestations

- Cough
- Pains – pleuritic, pressure and heaviness
- Progressive dyspnea on exertion

- Severity of symptoms often depend more on the rate of fluid accumulation than on the total amount of accumulated fluid

How much fluid can I drain with a thoracentesis?

1) 500 mls
2) 1000 mls
3) 1500 mls
4) 2000 mls
5) 3000 mls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Large-Volume Thoracetesis and the Risk of Reexpansion Pulmonary Edema

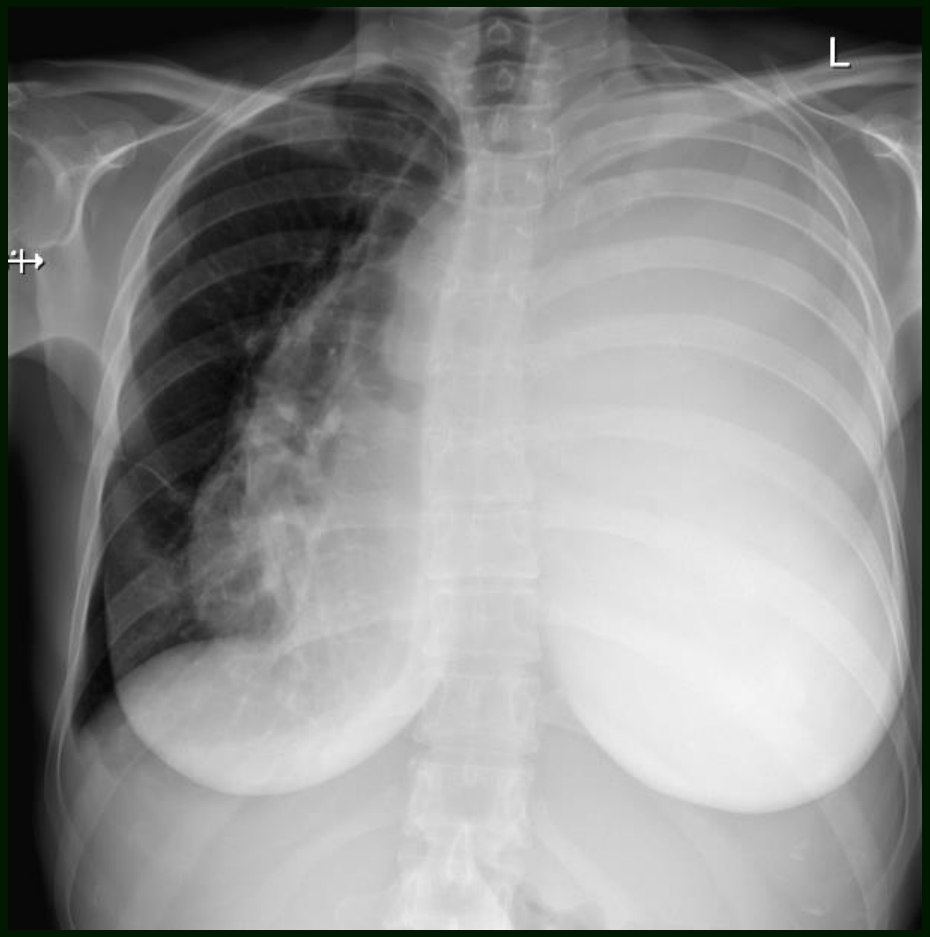
- Prospective study of 185 patients undergoing thoracentesis of > 1 litre
- The recommendation to terminate thoracentesis after removing 1 L of fluid needs to be reconsidered

Feller-Kopman D, et.al. Large-Volume Thoracetesis and the Risk of Reexpansion Pulmonary Edema. Ann Thorac Surg 2007;84:1656-62.

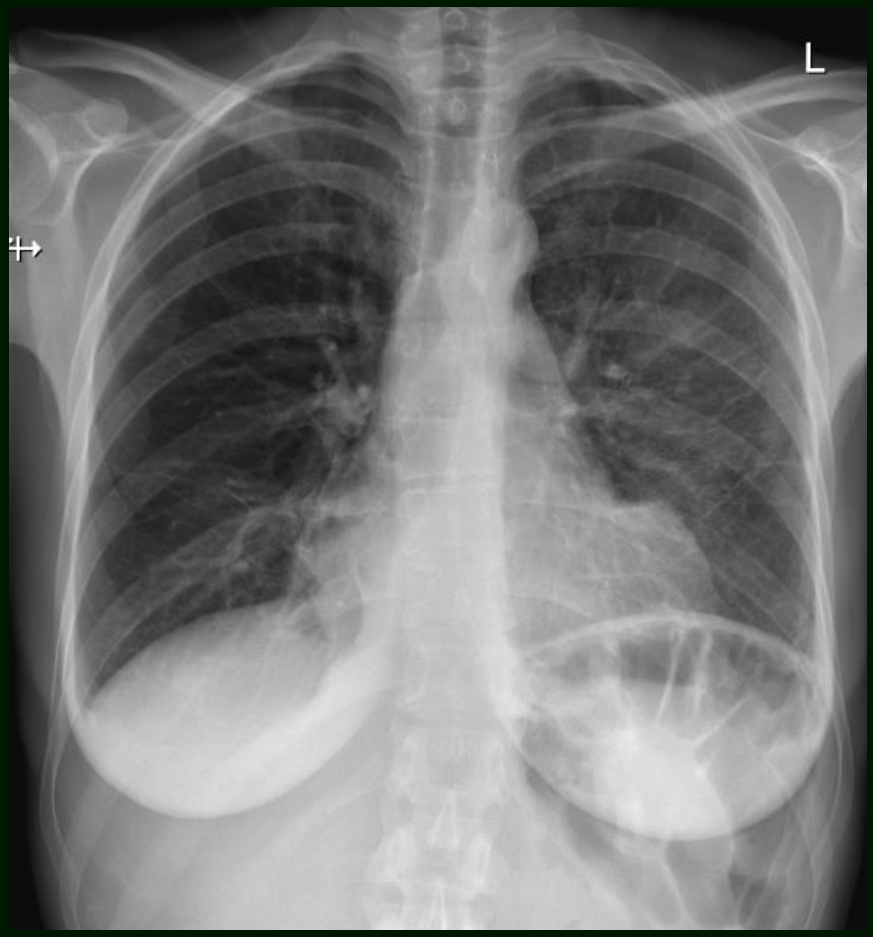
My personal approach…

- RPO happens in 0-1%; be aware of that
- Stop when patients become symptomatic, or just before, often around 1.5-2 litres
- Consider repeating the procedure in 24-48 hours if significant fluid remains

Large Volume Thoracentesis



BEFORE



AFTER

Thoracentesis – Other Risks

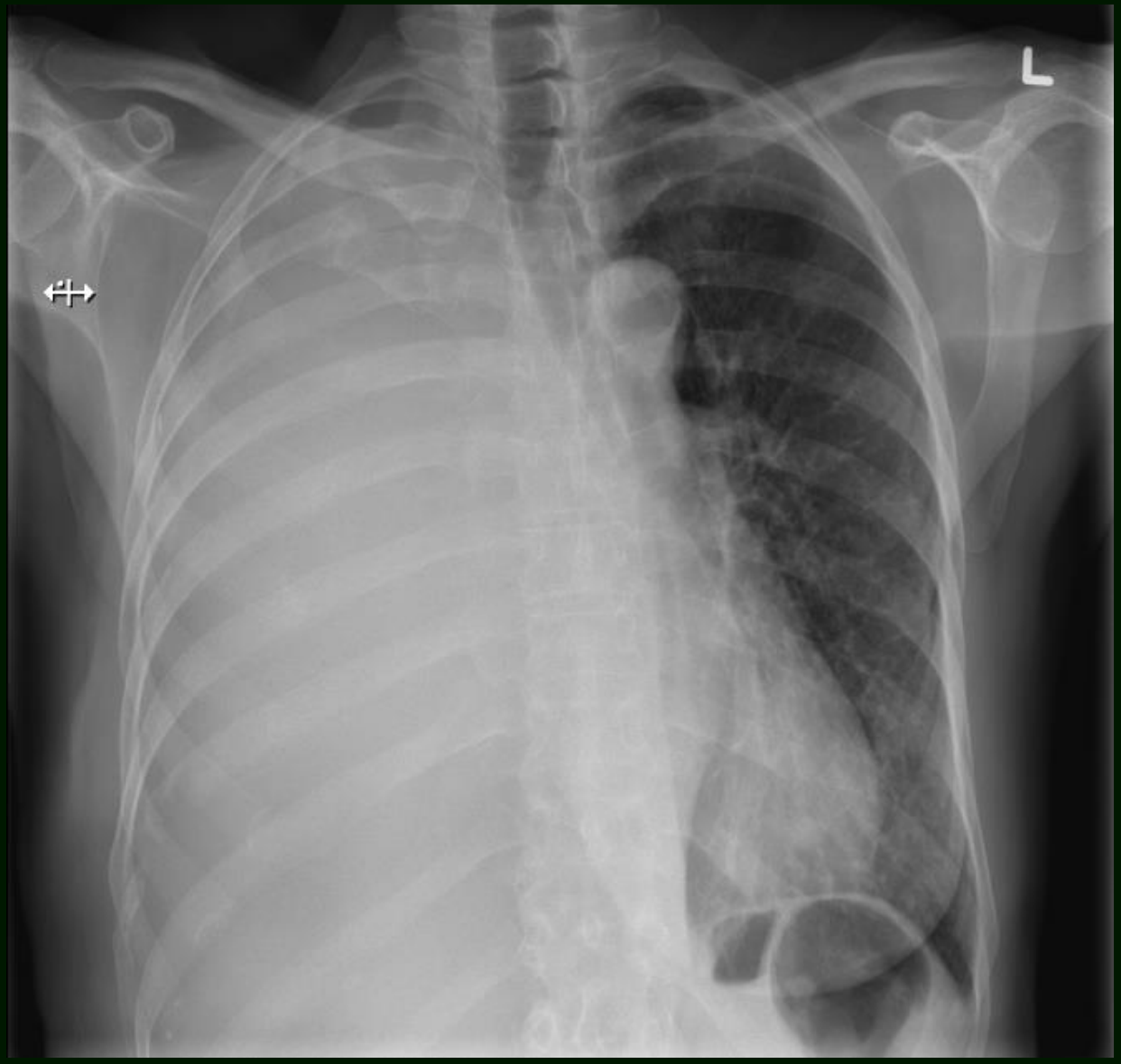
- Pain
- Bleeding / Bruising
- Infection
- Pneumothorax
- Liver injuries
- Spleen injuries
- Cardiac injuries

Do I have to keep draining this?

Can one get rid of the recurrent effusion?

Malignant Pleural Effusion
Therapeutic options

- Depend on:
  - Etiology
  - Symptoms
  - Performance status
  - Estimated length of survival
  - Goals of care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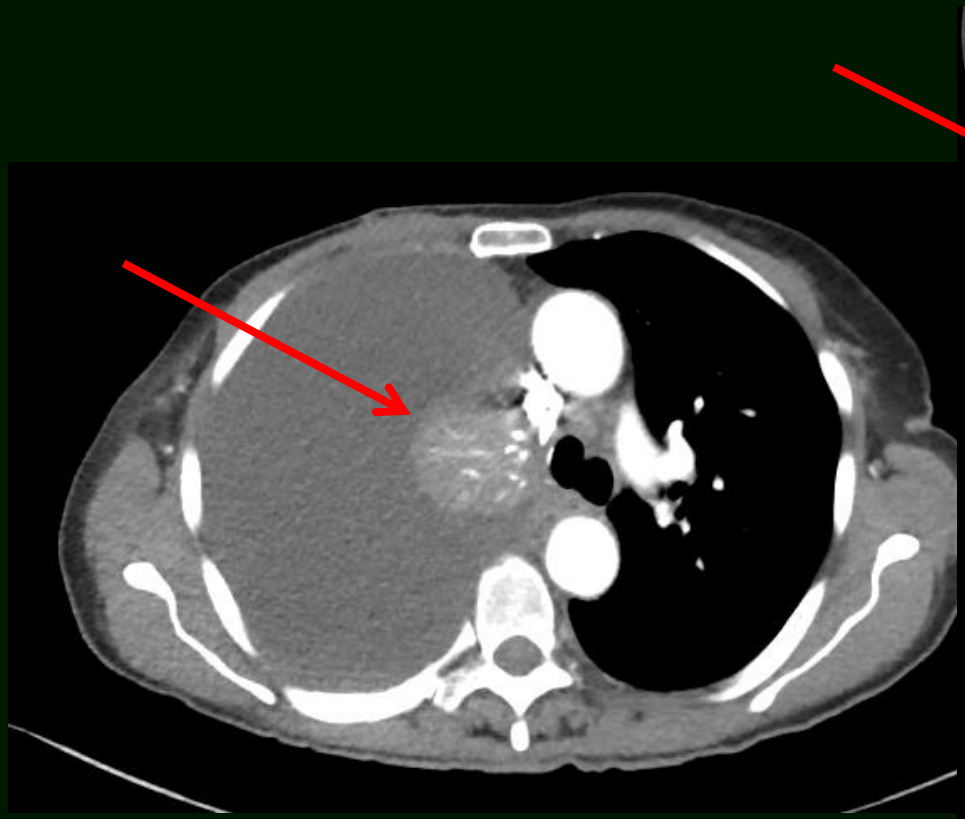

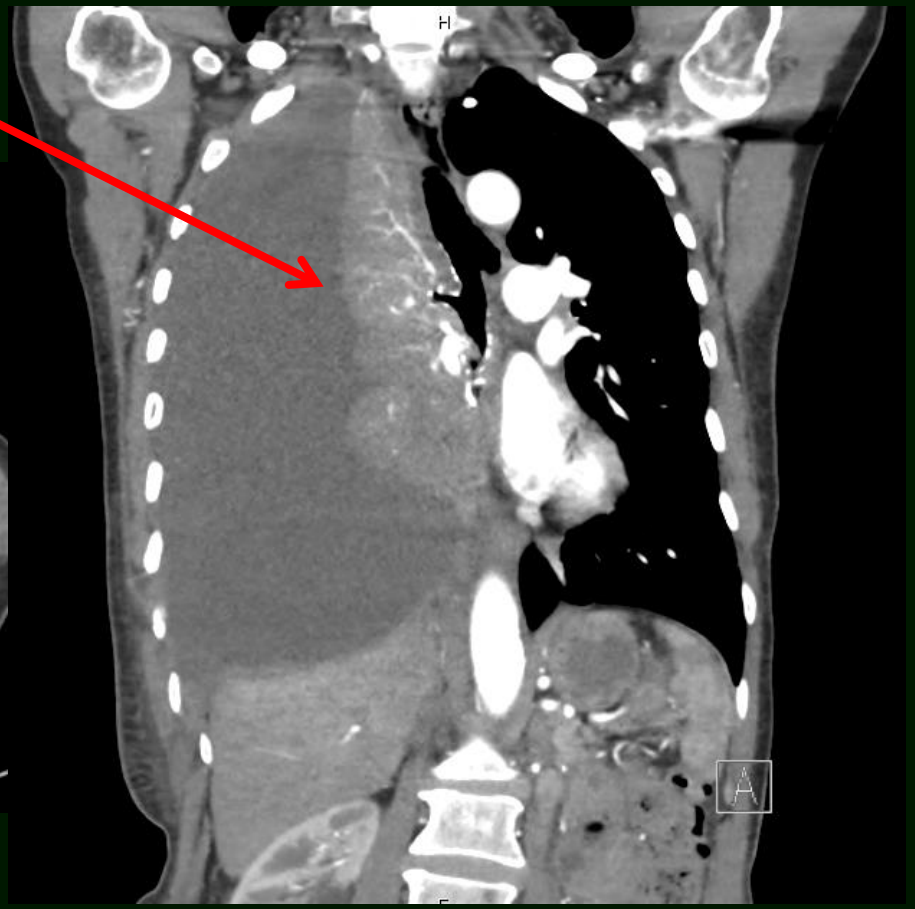
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Resolving Malignant Pleural Effusions
Effectiveness of Therapeutic Options (% resolution)

• Therapeutic thoracenteses	0
• Indwelling pleural catheter (IPC)	40-70
• Chest tube drain	10-30
• Chest tube drain with talc slurry	60-64
• VATS with talc poudrage	75-87
• VATS with pleural abrasion and pleurectomy	93-100
• Pleuroperitoneal shunt	95


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Effectiveness of Sclerosing Agents for Malignant Pleural Effusions

- Talc 81-93
- Antineoplastic Agents:
  - Bleomycin 72-84
  - Doxorubicin 70
  - Mitomycin 70
- Antibiotics:
  - Tetracycline 15-92
  - Doxycycline 80-85
  - Minocycline 90-100
- Biologic agents:
  - Interferon 40
  - Interleukin-2 72
  - Corynebacterium parvum 85

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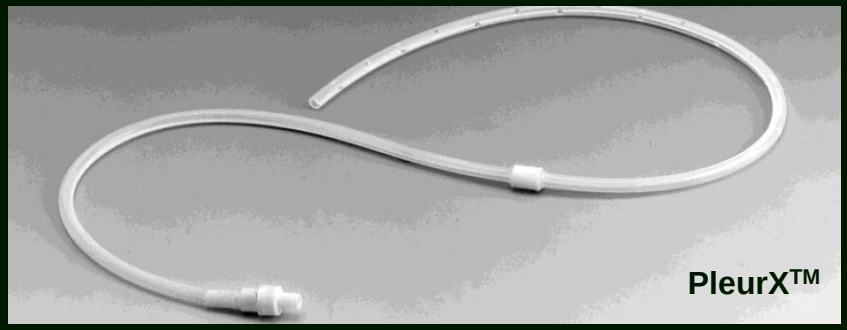
Indwelling Pleural Catheter vs Doxycycline Pleurodesis



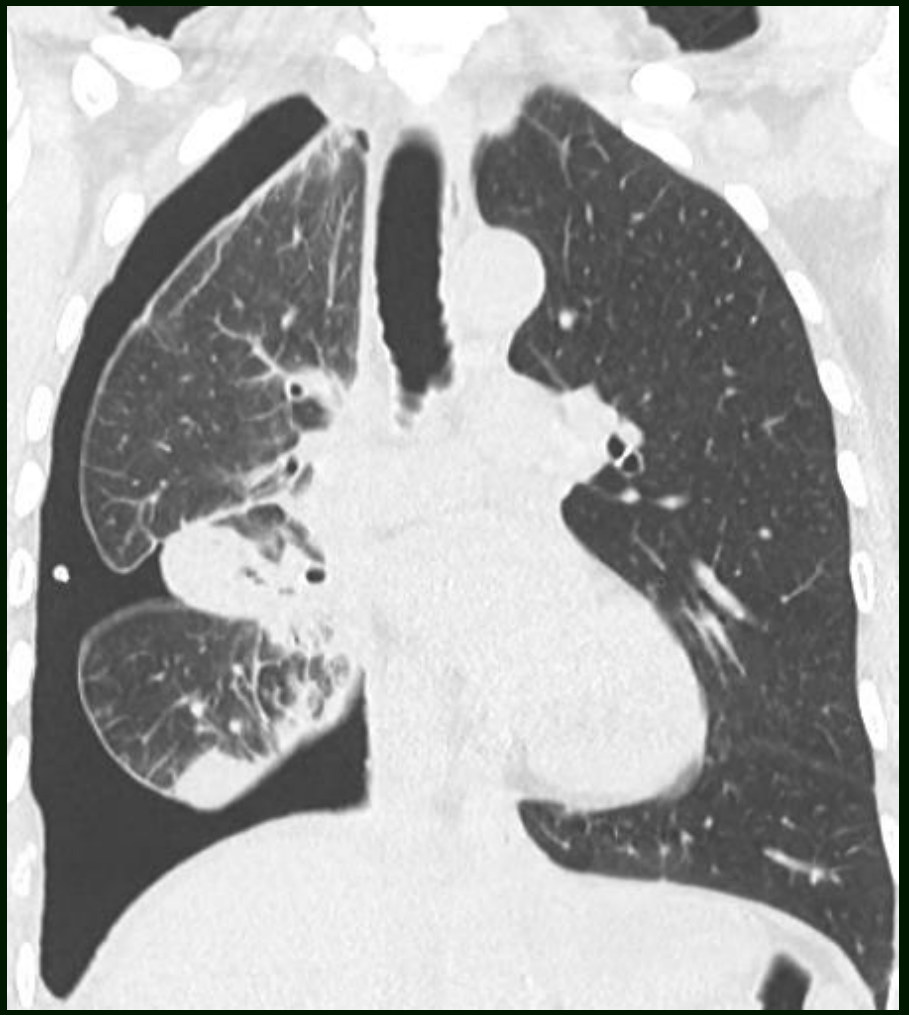
- 144 patients
- Vacuum bottle drainage EOD or prn for dyspnea
- Median hospitalization: 1 vs 6.5 days
- Equal improvement in symptoms and in Quality of Life
- 21% of doxycycline group had late recurrence of effusion
- 13% of IPC had late recurrence or catheter blockage after initially successful treatment
- 42% of IPC group had spontaneous pleurodesis after median 26.5 days

Putman JB, et.al. A Randomized Comparison of Indwelling Pleural Catheter and Doxycycline Pleurodesis in the Management of Malignant Pleural Effusion. Cancer 1999;86:1992-9.

IPC vs Chest Tube and Talc Pleurodesis

- 106 patients
- 0 vs 4 hospital days
- No significant difference in dyspnea over 6 weeks
- No difference in Quality of Life scores
- 22% of talc patients required repeat pleurodesis vs 6% in IPC group
- 40% vs 13% adverse events, most non-serious, including mild infections and catheter blocks

Davies HE, et.al. Effect of an Indwelling pleural Catheter vs Chest Tube and Talc Pleurodesis for Relieving Dyspnea in Patients With Malignant Pleural Effusion. JAMA 2012;307(22):2383-2389.

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Managing Dyspnea in Advanced Disease

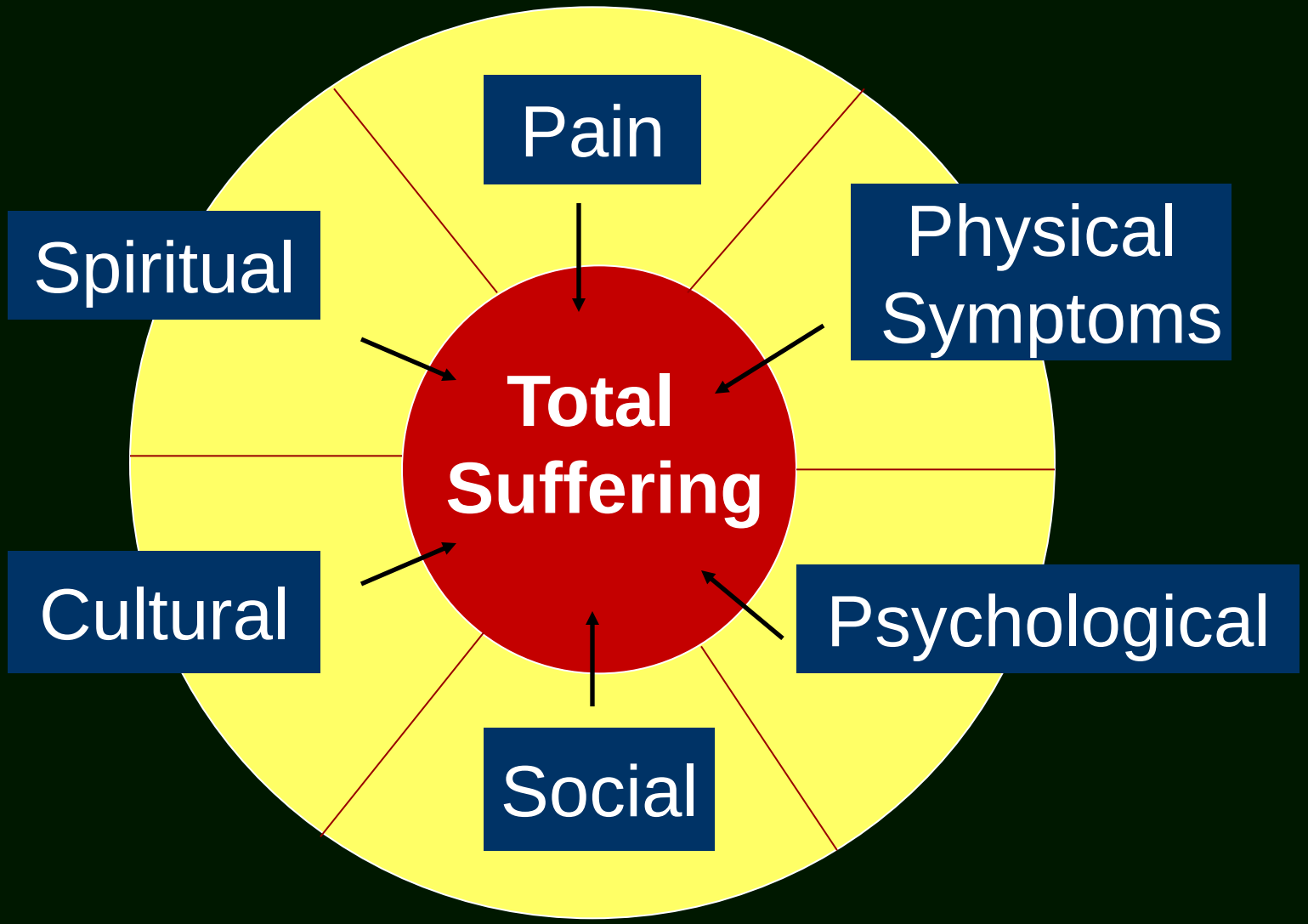
Mr. T

- 71 year old man with advanced lung cancer
- P.H. of CAD, a MI 6 years ago, and CHF
- In clinic for follow up, he states that he is having more difficulty walking to the mailbox, just two houses away, and he needs to rest halfway up the stairs from his basement
- He is wondering about getting some Home O2

Dyspnea / Breathlessness

- The awareness of uncomfortable breathing
- Common problem: up to 50% of general cancer population
- Complex, subjective symptom
- Assessment:
  - Visual analog scales – intensity measurement
  - Effect on ADL
- Influenced by psychosocial and spiritual factors

Total Suffering (Woodruff)



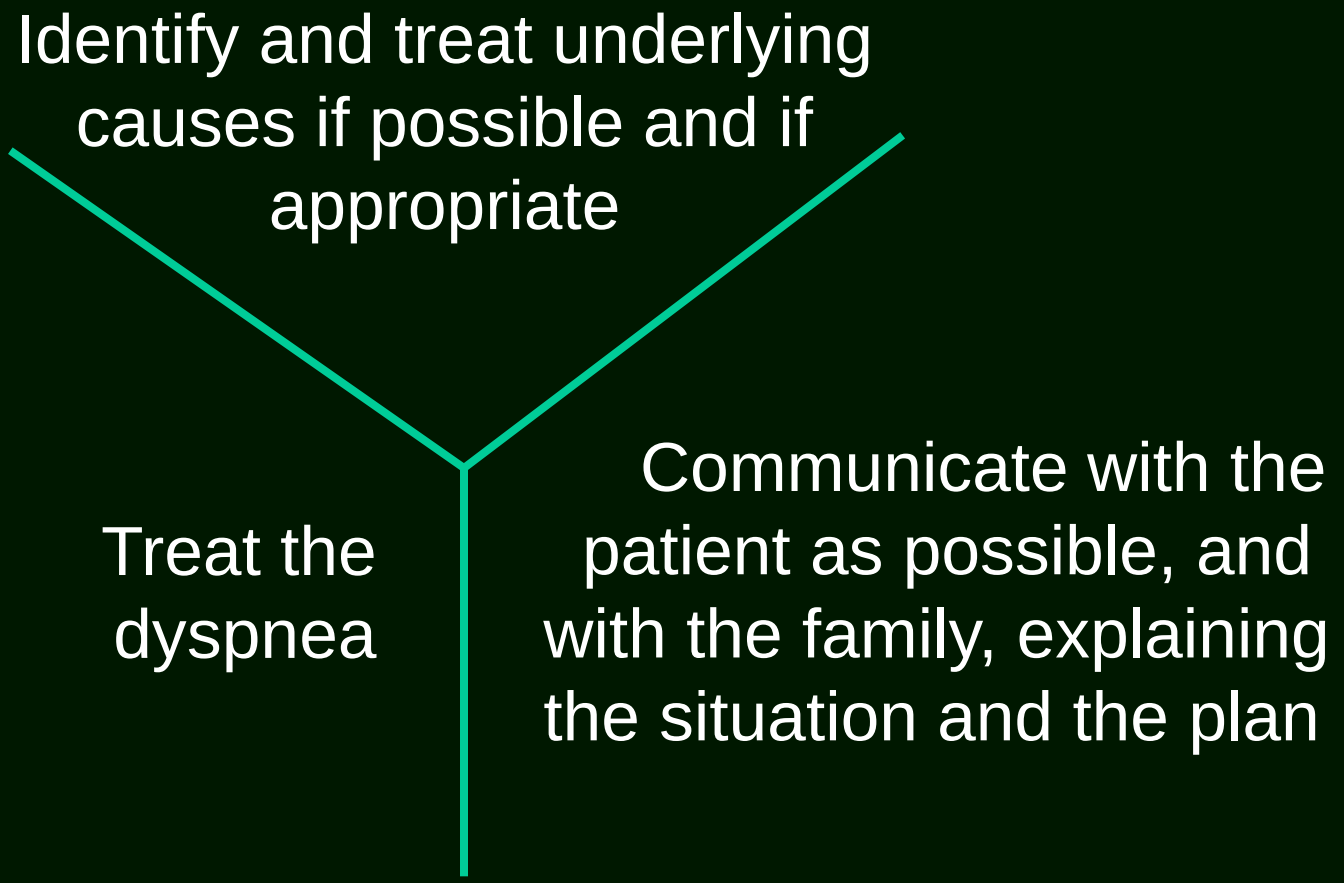
Causes of Dyspnea

- Pulmonary causes
  - Airway obstruction, pleural effusion, COPD, lymphangitic carcinomatosis, pneumonia, pulmonary embolism, etc.
- Cardiac causes - CHF, pericardial effusion
- Systemic causes - Anemia
- Muscle weakness - ALS, cachexia
- Other - Ascites
- Psychological

Assessment of Dyspnea

- Pattern
  - Intermittent
  - Continuous
  - Acute intense episodes
- Triggers
- Associated emotions
- Use scales to measure and monitor
- Investigations as needed

Management Approach to Dyspnea



Managing Underlying Causes - Examples

- Pleural effusion – thoracentesis
- Large airway obstruction – stenting, radiotherapy
- Pneumonia – antibiotics
- Anemia – therapeutic trial of transfusion
- CHF and COPD – optimize medications

Non-pharmacological Management of Dyspnea

- Avoid exacerbating activities & conserve energy
- Normalize emotional responses to dyspnea
- Use a fan
- Position: lean forward, head up
- Limit people in room
- Reduce room temperature,
- Maintain humidity
- Open window for air and sight
- Avoid irritants e. g. smoke
- Relaxation therapy

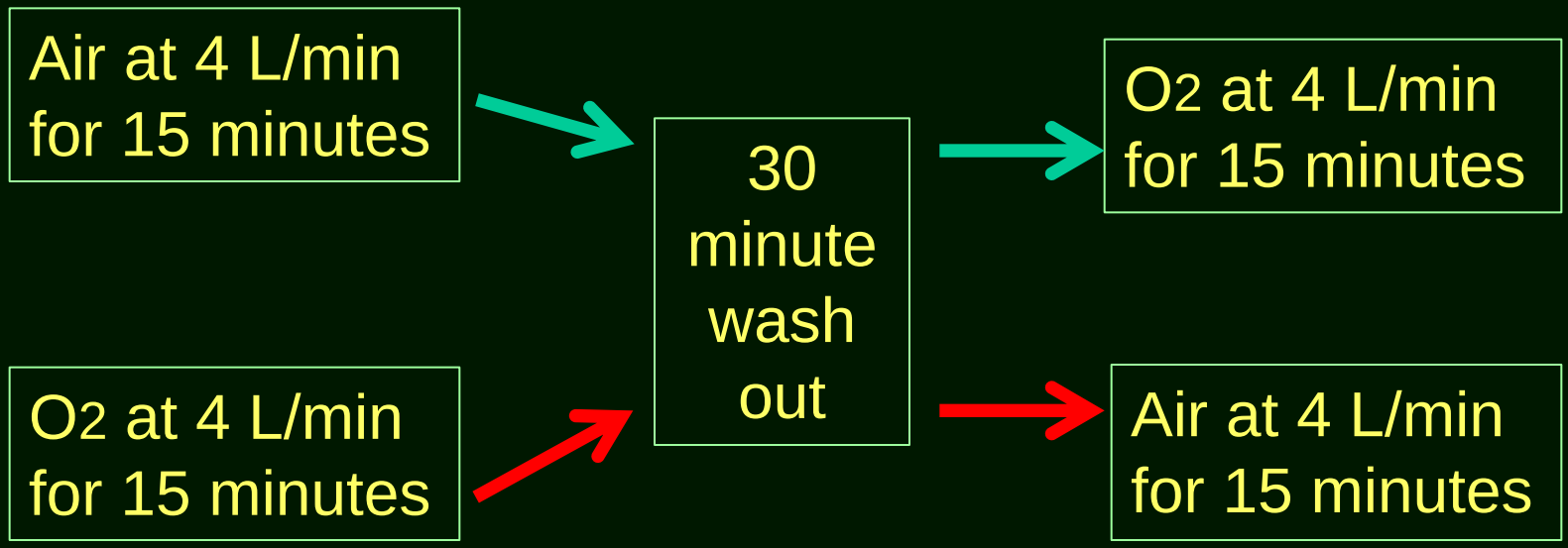
What is the role of oxygen
in the management
of dyspnea?

Role of Oxygen in Dyspnea

- Mechanism: unclear
- What is helping?
  - Oxygen, airflow, placebo, something else?

- O_2 in hypoxic cancer patients may be useful
- O_2 in non-hypoxic cancer patients has not been shown to be useful

Oxygen vs Air for Patients with Cancer and Dyspnea



- VAS: no significant difference
- EORTC Verbal Rating Scale: no significant difference

Philip et.al. A Randomized, Double-Blind, Crossover Trial of the Effect of Oxygen on Dyspnea in Patients with Advanced Cancer. J Pain Symptom Manage 2006;32:541-550

Oxygen vs Air for Patients with Cancer and Dyspnea

Oxygen Saturation:

- Significant improvement in the group receiving Oxygen (5.43%) vs the group receiving air (0.94%)

Gas Preference:

- 21 (41%) patients preferred Oxygen
- 15 (29%) patients preferred air
- 15 (29%) patients expressed no preference

(*P=0.357 – not significant*)

Philip et.al. A Randomized, Double-Blind, Crossover Trial of the Effect of Oxygen on Dyspnea in Patients with Advanced Cancer. J Pain Symptom Manage 2006;32:541-550

Oxygen vs Air for Patients with Cancer and Dyspnea

Hypoxic Group:

- 17 patients
- Mean SAO2 increased by 10.7% with Oxygen and 2.7% with air *(p=0.005)*
- Mean change in VAS score increased by 15.4 mm with air and 13.3 mm with oxygen *(p=0.812)*
- 35 % expressed preference for air, 24 % for oxygen and 41 % had no preference

Philip et.al. A Randomized, Double-Blind, Crossover Trial of the Effect of Oxygen on Dyspnea in Patients with Advanced Cancer. J Pain Symptom Manage 2006;32:541-550

Potential Disadvantages of Oxygen

- Mobility and safety related to the Oxygen tubing
- Difficulty transporting the tank and difficulty using a walker with an oxygen tank (more modern equipment helped)
- Discomfort in the nasal cavity and ears related to nasal prongs.
- Noise related to the equipment

Jaturapatporn D et.al. Patients' experience of oxygen therapy and dyspnea: a qualitative study in home palliative care. Support Care Cancer (2010) 18:765–770.

Opioids in the Palliation of Dyspnea

Opioids worked significantly better than oxygen
in reducing the intensity of dyspnea,
both in hypoxic and non-hypoxic patients.

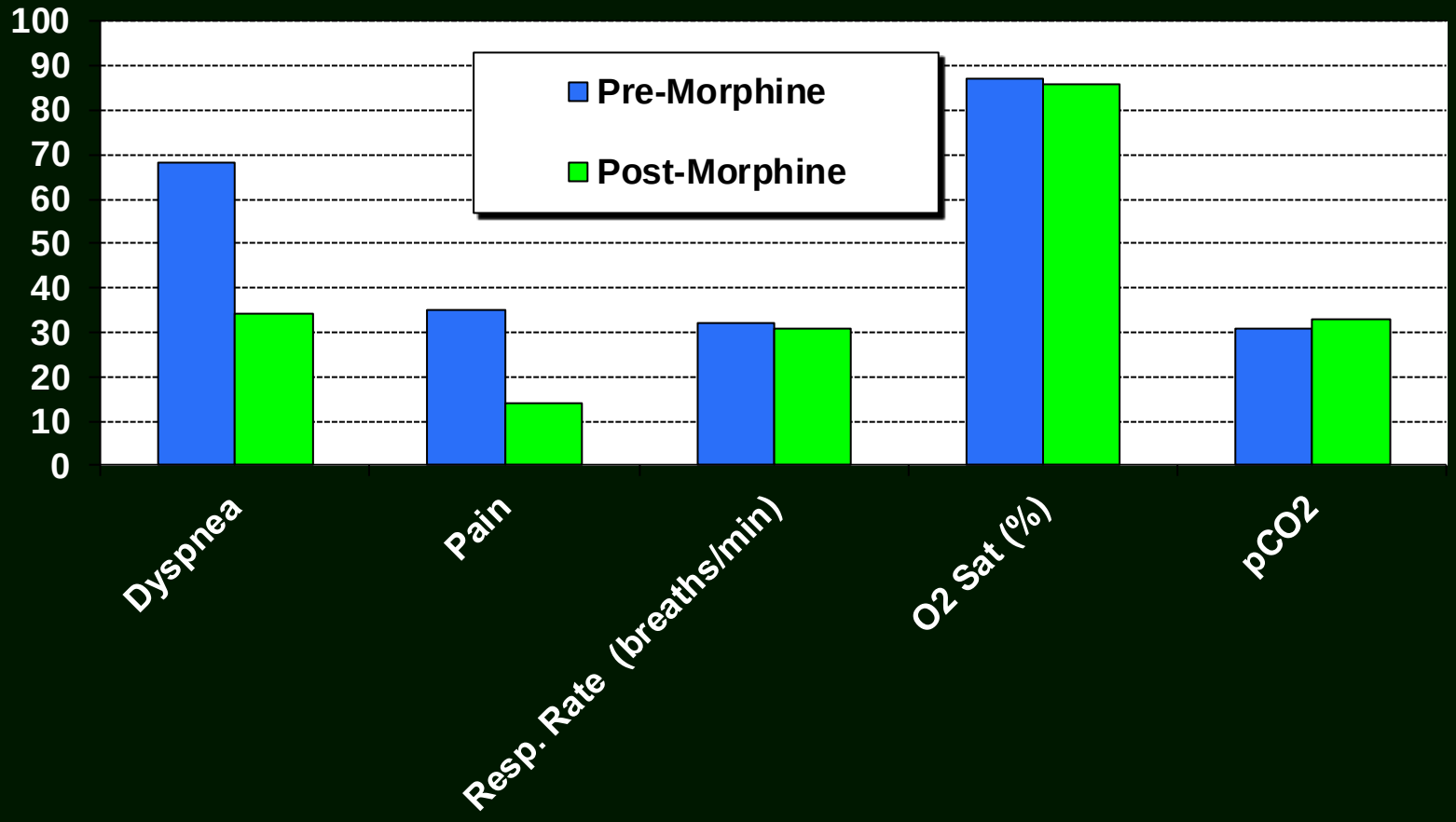
Clemens KE et.al. Use of oxygen and opioids in the palliation of dyspnoea in hypoxic and non-hypoxic palliative care patients: a prospective study. Support Care Cancer (2009) 17:367–377

Doesn't the use of opioids hasten death?

Opioids in Dyspnea

- Safe and effective
- Opioids have been shown to give significant relief in all causes of dyspnea in advanced disease
- Same principles of use as with pain management
  - oral, parenteral
  - no evidence for nebulized opioids

Subcutaneous Morphine in Terminal Cancer



Bruera et al. J Pain Symptom Manage. 1990; 5:341-344

Opioids, Survival and Advanced Cancer in the Hospice Setting

- 114 consecutive hospice patients, ages 13-71
- Analysis of survival, according to opioid use
- No significant relationship found been mortality and:
  - Dose on admission
  - Dose at death
  - Mean dose
  - Overall dose increase and decrease
  - Day by day dosage changes

Azoulay D, et.al. J Am Med Dir Assoc 2011;12:129-34

Opioids, Survival and Advanced Cancer in the Hospice Setting

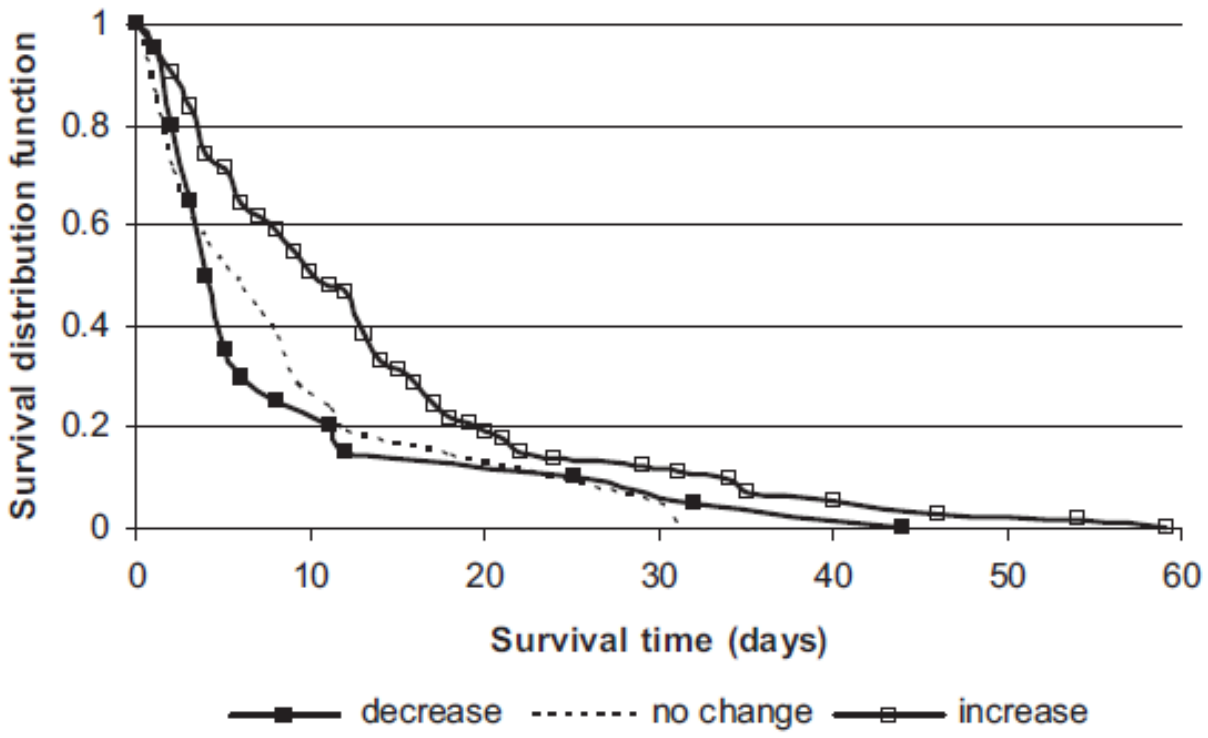


Fig. 1. *Kaplan-Meier survival curves according to overall change in opioid dosage during hospice admission.*

Azoulay D, et.al. J Am Med Dir Assoc 2011;12:129-34

Adjuvant Medications for Dyspnea
Consider the Circumstances

- Methotrimeprazine 2.5-12.5mg bid-tid
- Chlorpromazine 7.5-15mg bid-tid
- Lorazepam or clonazepam 0.5-1mg q6-8hr
  - only if anxiety is causal factor
- Steroids
- Bronchodilators (only if bronchoconstriction)
- Furosemide – CHF, pulmonary edema

Summary Comments

- Decision making in advanced disease involves thinking a few steps ahead
- Intervention for a pleural effusion is not always indicated; if it is, consider various alternatives
- Oxygen is a medication, requires a prescription, has benefits but also potential harms
- Opioids may be more effective than oxygen for breathlessness
- O_2 in may be useful in hypoxic cancer patients, but has not been shown useful in non-hypoxic patients