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Dead space

CHAPTER 1 · CARD 2

Zone of apposition

CHAPTER 1 · CARD 3

Haldane effect

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Bohr effect

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Causes of hypoxemia

CHAPTER 1 · CARD 6

Normal alveolar-arterial gradient with hypoxemia

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Shunt

CHAPTER 1 · CARD 8

Residual volume

CARD 2

The part of the diaphragm lying against the inner lower rib cage, through which diaphragm contraction expands the lower chest.

CARD 1

Ventilated airway and alveolar volume that takes no part in gas exchange; its share of each breath rises with rapid, shallow breathing.

CARD 4

Acidosis and raised carbon dioxide lower hemoglobin's oxygen affinity, shifting the dissociation curve to the right.

CARD 3

Deoxygenated hemoglobin carries more carbon dioxide, so oxygenation in the lungs releases carbon dioxide from blood.

CARD 6

Points to hypoventilation or low inspired oxygen rather than lung disease.

CARD 5

Low inspired oxygen, hypoventilation, ventilation-perfusion mismatch, shunt and diffusion limitation.

CARD 8

Gas remaining after maximal exhalation; measured by plethysmography or gas dilution, not spirometry.

CARD 7

Blood reaching the systemic circulation without passing ventilated alveoli; hypoxemia responds poorly to oxygen.

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Right main bronchus

CHAPTER 1 · CARD 10

Bronchial circulation

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Massive hemoptysis, clinical meaning

CHAPTER 2 · CARD 12

Common causes of chronic cough with normal chest radiograph

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Hoover sign

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Clubbing, pulmonary causes

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Platypnea-orthodeoxia

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Stony dullness

CARD 10

Systemic arterial supply to the airways; the usual source of massive hemoptysis.

CARD 9

Shorter, wider and more vertical than the left, so it receives most aspirated material.

CARD 12

Asthma or eosinophilic bronchitis, upper airway cough syndrome, reflux and ACE inhibitors.

CARD 11

Bleeding that threatens the airway or gas exchange or causes instability; asphyxiation is the main danger.

CARD 14

Lung cancer, bronchiectasis and cystic fibrosis, lung abscess and empyema, fibrotic interstitial lung disease; not COPD alone.

CARD 13

Paradoxical inward movement of the lower rib margins on inspiration from a flattened diaphragm in hyperinflation.

CARD 16

Percussion finding of pleural effusion, with reduced breath sounds and vocal resonance.

CARD 15

Breathlessness and desaturation on sitting up from increased right-to-left shunting, relieved lying flat.

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Bronchial breathing

CHAPTER 2 · CARD 18

Orthopnea, causes

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Obstruction

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Restriction

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Lower limit of normal

CHAPTER 3 · CARD 22

Bronchodilator responsiveness, 2022 standard

CHAPTER 3 · CARD 23

Acute respiratory acidosis compensation

CHAPTER 3 · CARD 24

Chronic respiratory acidosis compensation

CARD 18

Left heart failure, bilateral diaphragm weakness, ascites and severe obesity.

CARD 17

Harsh breath sounds with audible expiration over consolidated lung that transmits sound well.

CARD 20

Total lung capacity below the lower limit of normal; spirometry alone can only suggest it.

CARD 19

FEV1/FVC below the lower limit of normal.

CARD 22

A change of more than 10% of the predicted value in FEV1 or FVC.

CARD 21

Fifth percentile of the reference population, a z-score of minus 1.645.

CARD 24

Bicarbonate rises about 3.5 to 4 mmol/L per 10 mm Hg rise in PaCO2.

CARD 23

Bicarbonate rises about 1 mmol/L per 10 mm Hg rise in PaCO2.

CHAPTER 3 · CARD 25

Raised DLCO

CHAPTER 3 · CARD 26

Fixed upper airway obstruction

CHAPTER 3 · CARD 27

Carbon monoxide and oximetry

CHAPTER 3 · CARD 28

Ventilatory limitation on exercise testing

CHAPTER 4 · CARD 29

Silhouette sign

CHAPTER 4 · CARD 30

Right middle lobe disease

CHAPTER 4 · CARD 31

Lingular disease

CHAPTER 4 · CARD 32

Lower lobe disease

CARD 26

Flattening of both inspiratory and expiratory limbs of the flow-volume loop.

CARD 25

Alveolar hemorrhage, polycythemia, left-to-right shunt, sometimes asthma and obesity.

CARD 28

Peak ventilation approaches maximal voluntary ventilation with heart rate reserve remaining.

CARD 27

Pulse oximetry reads carboxyhemoglobin as oxyhemoglobin; co-oximetry is needed.

CARD 30

Effaces the right heart border.

CARD 29

Loss of a border where an opacity touches a structure of similar density; localizes disease.

CARD 32

Effaces the hemidiaphragm on the same side.

CARD 31

Effaces the left heart border.

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B-lines

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Lung point

CHAPTER 4 · CARD 35

Endosonography

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PET false positives

CHAPTER 4 · CARD 37

PET false negatives

CHAPTER 4 · CARD 38

Expiratory CT images

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Asthma diagnosis

CHAPTER 5 · CARD 40

AIR therapy

CARD 34

Ultrasound sign specific for pneumothorax, where sliding lung meets the pneumothorax.

CARD 33

Vertical ultrasound artifacts; multiple bilateral B-lines mark an interstitial syndrome such as edema.

CARD 36

Granulomatous disease, infection and inflammation.

CARD 35

Endobronchial or esophageal ultrasound needle sampling, the preferred first test for mediastinal staging.

CARD 38

Show air trapping, suggesting small airway disease or hypersensitivity pneumonitis.

CARD 37

Small nodules, adenocarcinoma in situ, mucinous tumors and carcinoids.

CARD 40

Anti-inflammatory reliever: as-needed low-dose ICS-formoterol.

CARD 39

Characteristic symptoms plus documented variable expiratory airflow limitation.

CHAPTER 5 · CARD 41

MART

CHAPTER 5 · CARD 42

Type 2 biomarkers

CHAPTER 5 · CARD 43

Omalizumab target

CHAPTER 5 · CARD 44

Mepolizumab target

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Benralizumab target

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Dupilumab target

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Tezepelumab target

CHAPTER 5 · CARD 48

Aspirin-exacerbated respiratory disease

CARD 42

Blood eosinophils, FeNO and allergen-specific IgE.

CARD 41

Maintenance and reliever therapy with the same ICS-formoterol inhaler.

CARD 44

IL-5.

CARD 43

IgE.

CARD 46

IL-4 receptor alpha, blocking IL-4 and IL-13 signaling.

CARD 45

IL-5 receptor alpha, causing eosinophil depletion.

CARD 48

Asthma, nasal polyps and respiratory reactions to COX-1 inhibitors.

CARD 47

Thymic stromal lymphopoietin.

CHAPTER 5 · CARD 49

Rising PaCO2 in acute asthma

CHAPTER 5 · CARD 50

Inducible laryngeal obstruction

CHAPTER 5 · CARD 51

Severe asthma

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Montelukast boxed warning

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Asthma in pregnancy

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SABA overreliance

CHAPTER 5 · CARD 55

Bronchial thermoplasty

CHAPTER 5 · CARD 56

FeNO confounders

CARD 50

Paradoxical glottic narrowing with inspiratory noise; confirmed by laryngoscopy during provocation.

CARD 49

Sign of fatigue and impending respiratory failure.

CARD 52

Neuropsychiatric events including sleep disturbance and suicidal thoughts.

CARD 51

Uncontrolled despite adherent high-dose ICS-LABA, or worsens on step-down.

CARD 54

Three or more canisters a year marks exacerbation risk; 12 or more marks increased risk of death.

CARD 53

Continue controller therapy; uncontrolled asthma is the greater risk.

CARD 56

Lowered by smoking and inhaled corticosteroids.

CARD 55

Limited option for selected severe asthma in specialized centers.

CHAPTER 6 · CARD 57

COPD diagnosis

CHAPTER 6 · CARD 58

Long-term oxygen indication

CHAPTER 6 · CARD 59

LOTT result

CHAPTER 6 · CARD 60

ICS in COPD

CHAPTER 6 · CARD 61

REDUCE trial

CHAPTER 6 · CARD 62

Smoking cessation in COPD

CHAPTER 6 · CARD 63

NETT benefit group

CHAPTER 6 · CARD 64

Roflumilast adverse effects

CARD 58

Resting PaO2 55 mm Hg or less, or 56 to 59 with cor pulmonale or polycythemia; at least 15 hours daily.

CARD 57

Post-bronchodilator FEV1/FVC below 0.7 (GOLD) with compatible symptoms or exposure.

CARD 60

Add for exacerbations when blood eosinophils are 100 cells/µL or more; greatest benefit at 300 or more.

CARD 59

No benefit of long-term oxygen for moderate resting or exercise-induced desaturation.

CARD 62

The intervention that slows FEV1 decline.

CARD 61

5 days of prednisone noninferior to 14 days for COPD exacerbation.

CARD 64

Diarrhea, nausea, weight loss, insomnia and rare psychiatric effects.

CARD 63

Upper-lobe emphysema with low exercise capacity after rehabilitation.

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Azithromycin in COPD

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Home NIV in COPD

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Alpha-1 antitrypsin testing

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Dupilumab in COPD

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Asthma-COPD overlap

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Endobronchial valves

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Bronchiectasis minimum workup

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DNase in non-CF bronchiectasis

CARD 66

Persistent hypercapnia after exacerbation; set to reduce $PaCO_2$.

CARD 65

Reduces exacerbations; check hearing and QT and exclude mycobacteria.

CARD 68

Eosinophilic COPD (300 cells/μL or more) uncontrolled on inhaled therapy.

CARD 67

Once for every patient with COPD.

CARD 70

Need intact fissures without collateral ventilation.

CARD 69

Include an ICS and avoid LABA monotherapy.

CARD 72

Harmful; increases exacerbations.

CARD 71

Blood count, immunoglobulins, ABPA testing, sputum bacterial and mycobacterial culture.

CHAPTER 7 · CARD 73

Brensocatib

CHAPTER 7 · CARD 74

Sweat chloride diagnostic of CF

CHAPTER 7 · CARD 75

CFTR potentiator

CHAPTER 7 · CARD 76

CFTR correctors

CHAPTER 7 · CARD 77

Burkholderia cenocepacia

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Primary ciliary dyskinesia clues

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Constrictive bronchiolitis

CHAPTER 7 · CARD 80

Hemoptysis in CF

CARD 74

60 mmol/L or more.

CARD 73

Dipeptidyl peptidase 1 inhibitor reducing neutrophil serine protease activation.

CARD 76

Elexacaftor and tezacaftor; improve folding and trafficking.

CARD 75

Ivacaftor; increases channel open probability.

CARD 78

Neonatal distress, daily wet cough from infancy, otitis and situs inversus.

CARD 77

Rapid decline and poor transplant outcomes in CF.

CARD 80

Usually bronchial arteries; treated by embolization.

CARD 79

Fixed obstruction with mosaic attenuation and expiratory air trapping.

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Typical UIP on CT

CHAPTER 8 · CARD 82

PANTHER-IPF

CHAPTER 8 · CARD 83

Progressive pulmonary fibrosis

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Physiologic progression in PPF

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Nintedanib main adverse effect

CHAPTER 8 · CARD 86

Pirfenidone adverse effects

CHAPTER 8 · CARD 87

Transplant referral in IPF

CHAPTER 8 · CARD 88

Combined pulmonary fibrosis and emphysema

CARD 82

Prednisone, azathioprine and N-acetylcysteine increased death and hospitalization.

CARD 81

Basal subpleural reticulation with honeycombing, with or without traction bronchiectasis.

CARD 84

Absolute FVC decline of 5% or more, or DLCO decline of 10% or more, in a year.

CARD 83

Two of three within a year: worse symptoms, physiologic decline, radiologic progression.

CARD 86

Photosensitivity rash, nausea and anorexia; monitor liver tests.

CARD 85

Diarrhea; monitor liver tests.

CARD 88

Preserved volumes with very low DLCO; pulmonary hypertension common.

CARD 87

At diagnosis for potentially suitable candidates.

CHAPTER 8 · CARD 89

Short telomere features

CHAPTER 8 · CARD 90

Smoking-related ILDs that regress

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Acute exacerbation of IPF

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SSc-ILD first-line therapy

CHAPTER 9 · CARD 93

Anti-MDA5

CHAPTER 9 · CARD 94

Hypersensitivity pneumonitis CT

CHAPTER 9 · CARD 95

Bleomycin toxicity

CHAPTER 9 · CARD 96

Organizing pneumonia CT

CARD 90

RB-ILD, desquamative interstitial pneumonia, often Langerhans cell histiocytosis.

CARD 89

Premature graying, cytopenias, liver disease and familial fibrosis.

CARD 92

Mycophenolate.

CARD 91

New bilateral ground-glass with deterioration; often no trigger found.

CARD 94

Mosaic attenuation and air trapping, centrilobular nodules, fibrosis not basal-predominant.

CARD 93

Rapidly progressive ILD with skin ulceration and little myositis.

CARD 96

Peripheral, peribronchovascular, migratory consolidation; reversed halo sign.

CARD 95

Dose-related fibrosis worsened by high inspired oxygen.

CHAPTER 9 · CARD 97

Chronic eosinophilic pneumonia

CHAPTER 9 · CARD 98

RA-ILD prognosis

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Checkpoint inhibitor pneumonitis grade 2

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Commonest lupus thoracic manifestation

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IPAF

CHAPTER 9 · CARD 102

Anti-synthetase syndrome

CHAPTER 9 · CARD 103

Drug-induced pneumonitis first step

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Löfgren syndrome

CARD 98

Worst with a UIP pattern.

CARD 97

Peripheral consolidation with lavage eosinophilia; rapid steroid response.

CARD 100

Pleuritis with or without effusion.

CARD 99

Hold the drug and start corticosteroids.

CARD 102

Myositis, ILD, mechanic's hands, arthritis, Raynaud; anti-Jo-1 and others.

CARD 101

Interstitial pneumonia with autoimmune features short of a defined connective tissue disease.

CARD 104

Hilar adenopathy, erythema nodosum or ankle periarthritis and fever; usually resolves.

CARD 103

Stop the suspected drug.

CHAPTER 10 · CARD 105

Sarcoidosis baseline screening

CHAPTER 10 · CARD 106

Sarcoidosis first-line therapy

CHAPTER 10 · CARD 107

Lymphangioleiomyomatosis

CHAPTER 10 · CARD 108

VEGF-D in LAM

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Langerhans cell histiocytosis

CHAPTER 10 · CARD 110

Birt-Hogg-Dubé

CHAPTER 10 · CARD 111

Autoimmune alveolar proteinosis

CHAPTER 10 · CARD 112

Cardiac sarcoidosis clues

CARD 106

Oral corticosteroids; methotrexate as steroid-sparing agent.

CARD 105

ECG, eye examination, calcium, renal and liver function.

CARD 108

800 pg/mL or more with typical cysts confirms the diagnosis.

CARD 107

Women; diffuse round thin-walled cysts, pneumothorax, chylothorax, angiomyolipoma.

CARD 110

Basal paramediastinal cysts, fibrofolliculomas and renal tumors (FLCN).

CARD 109

Smokers; upper-zone nodules and bizarre cysts sparing the bases.

CARD 112

Palpitations, syncope or conduction disease; cardiac MRI or FDG-PET.

CARD 111

Anti-GM-CSF antibodies; whole lung lavage or inhaled GM-CSF.

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Pneumothorax in LAM

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Healthy outpatient CAP

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CAP site-of-care tool

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CAP antibiotic duration

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Strongest MRSA risk factor in CAP

CHAPTER 11 · CARD 118

Severe CAP major criteria

CHAPTER 11 · CARD 119

Influenza in hospital

CHAPTER 11 · CARD 120

Post-influenza necrotizing pneumonia

CARD 114

Amoxicillin; doxycycline or macrolide as alternatives.

CARD 113

Recurs often; pleurodesis after the first episode.

CARD 116

Until stable and at least 5 days.

CARD 115

Pneumonia Severity Index with clinical judgment.

CARD 118

Septic shock needing vasopressors or mechanical ventilation.

CARD 117

Prior respiratory isolation of MRSA.

CARD 120

Staphylococcus aureus.

CARD 119

Oseltamivir as soon as possible, even after 48 hours.

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Legionella clues

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VAP definition

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Supine aspiration sites

CHAPTER 11 · CARD 124

Pneumocystis risk in HIV

CHAPTER 11 · CARD 125

RECOVERY dexamethasone

CHAPTER 11 · CARD 126

Procalcitonin role

CHAPTER 11 · CARD 127

CAPE COD trial

CHAPTER 11 · CARD 128

Atypical pneumonia organisms

CARD 122

Pneumonia more than 48 hours after intubation.

CARD 121

Hyponatremia, diarrhea, confusion, water-system exposure.

CARD 124

CD4 below 200 cells/µL.

CARD 123

Posterior upper lobe and superior lower lobe segments.

CARD 126

Supports stopping antibiotics; not alone for withholding them.

CARD 125

Reduced mortality in patients on oxygen or ventilation.

CARD 128

Mycoplasma, Chlamydophila, Legionella.

CARD 127

Hydrocortisone reduced mortality in severe CAP in ICU.

CHAPTER 11 · CARD 129

Pneumococcal urinary antigen

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Aspiration anaerobic coverage

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IGRA advantage

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Short LTBI regimens

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Ethambutol toxicity

CHAPTER 12 · CARD 134

Isoniazid neuropathy

CHAPTER 12 · CARD 135

MAC diagnosis

CHAPTER 12 · CARD 136

Nodular MAC treatment

CARD 130

Not routine unless abscess or empyema.

CARD 129

Recommended in severe CAP.

CARD 132

3HP weekly, 4R daily or 3HR daily.

CARD 131

Unaffected by BCG and most nontuberculous mycobacteria.

CARD 134

Prevented with pyridoxine in people at risk.

CARD 133

Optic neuritis with loss of acuity and red-green color vision.

CARD 136

Azithromycin, rifampin and ethambutol three times weekly until 12 months culture-negative.

CARD 135

Symptoms, imaging and two positive sputum cultures or one bronchoscopic culture.

CHAPTER 12 · CARD 137

Chronic pulmonary aspergillosis

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Invasive aspergillosis clues

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Histoplasmosis

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BPaLM

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ART timing in TB with CD4 below 50

CHAPTER 12 · CARD 142

Coccidioidomycosis

CHAPTER 13 · CARD 143

Fleischner 6 to 8 mm solid, high risk

CHAPTER 13 · CARD 144

USPSTF 2021 screening

CARD 138

Neutropenia, halo sign, air crescent, raised galactomannan.

CARD 137

Cavitary disease for 3 months with aspergillus IgG in damaged lungs.

CARD 140

Bedaquiline, pretomanid, linezolid and moxifloxacin for rifampin-resistant TB.

CARD 139

Ohio and Mississippi valleys; bird and bat droppings.

CARD 142

Southwest desert; valley fever, erythema nodosum and thin-walled cavities.

CARD 141

Within 2 weeks of starting TB treatment, except meningitis.

CARD 144

Age 50 to 80, 20 pack-years, current or quit within 15 years.

CARD 143

CT at 6 to 12 months, then 18 to 24 months.

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NLST

CHAPTER 13 · CARD 146

Part-solid nodule risk

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TNM 9 nodal change

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EBUS reach

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PET-CT limits

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Lung-RADS 4B

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Advanced nonsquamous NSCLC testing

CHAPTER 13 · CARD 152

Screening and smoking

CARD 146

Size and growth of the solid component.

CARD 145

Low-dose CT reduced lung cancer mortality by about 20% vs radiography.

CARD 148

Mediastinal stations 2, 4, 7 and hilar stations 10 and 11.

CARD 147

N2a single station; N2b multiple stations.

CARD 150

Very suspicious; e.g. solid nodule 15 mm or more at baseline.

CARD 149

Unreliable for subsolid and small nodules; inflammation gives false positives.

CARD 152

Offer cessation support to every current smoker.

CARD 151

Broad molecular profiling plus PD-L1 before treatment.

CHAPTER 13 · CARD 153

Benign calcification patterns

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Brock model risk factors

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Small peripheral stage IA NSCLC

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PACIFIC

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ALK-positive NSCLC first line

CHAPTER 14 · CARD 158

Small cell paraneoplastic syndromes

CHAPTER 14 · CARD 159

Extensive-stage SCLC first line

CHAPTER 14 · CARD 160

Thymoma association

CARD 154

Larger size, upper lobe, spiculation, female sex, older age, emphysema, fewer nodules.

CARD 153

Diffuse, central, laminated or popcorn.

CARD 156

Durvalumab after chemoradiation for unresectable stage III NSCLC.

CARD 155

Segmentectomy is an option for tumors 2 cm or less.

CARD 158

SIADH, Lambert-Eaton, ectopic ACTH.

CARD 157

Alectinib, brigatinib or lorlatinib.

CARD 160

Myasthenia gravis with acetylcholine receptor antibodies.

CARD 159

Platinum-etoposide plus atezolizumab or durvalumab.

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Anterior mediastinal masses

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Nonseminomatous germ cell tumor markers

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CheckMate 816

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Radiation pneumonitis timing

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Pancoast tumor

CHAPTER 14 · CARD 166

Typical carcinoid

CHAPTER 15 · CARD 167

Light's criteria

CHAPTER 15 · CARD 168

Pleural infection drainage

CARD 162

Raised alpha-fetoprotein and often beta-hCG.

CARD 161

Thymoma, lymphoma, germ cell tumor, thyroid.

CARD 164

1 to 6 months after thoracic radiotherapy.

CARD 163

Neoadjuvant nivolumab plus chemotherapy improved event-free survival.

CARD 166

Central, slow-growing, not smoking-related; resection.

CARD 165

Shoulder and arm pain with Horner syndrome.

CARD 168

Pus, positive Gram stain or culture, or pH below 7.2.

CARD 167

Exudate if fluid/serum protein above 0.5, fluid/serum LDH above 0.6, or fluid LDH above two thirds of upper normal serum LDH.

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MIST2

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Chylothorax

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Pseudochylothorax

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Hemothorax

CHAPTER 15 · CARD 173

Trapped lung with malignant effusion

CHAPTER 15 · CARD 174

Tuberculous pleurisy

CHAPTER 15 · CARD 175

Commonest transudate

CHAPTER 15 · CARD 176

Catamenial pneumothorax

CARD 170

Triglycerides above 110 mg/dL or chylomicrons.

CARD 169

tPA plus DNase improved drainage and reduced stay; neither alone worked.

CARD 172

Pleural hematocrit above half of blood hematocrit.

CARD 171

High cholesterol and cholesterol crystals in chronic effusions.

CARD 174

Lymphocytic exudate with high adenosine deaminase.

CARD 173

Indwelling pleural catheter.

CARD 176

Right-sided, around menstruation, thoracic endometriosis.

CARD 175

Heart failure.

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Mesothelioma

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Reexpansion edema

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Malignant pleural thickening on CT

CHAPTER 15 · CARD 180

Primary pneumothorax trial

CHAPTER 16 · CARD 181

Low probability and normal D-dimer

CHAPTER 16 · CARD 182

Preferred PE anticoagulant

CHAPTER 16 · CARD 183

DOAC avoid

CHAPTER 16 · CARD 184

Systemic thrombolysis indication

CARD 178

Cough and hypoxemia after rapid large-volume drainage.

CARD 177

Asbestos with decades of latency; not caused by smoking.

CARD 180

Conservative management noninferior for reexpansion at 8 weeks.

CARD 179

Nodular, circumferential or mediastinal, or over 1 cm.

CARD 182

Direct oral anticoagulant unless contraindicated.

CARD 181

Pulmonary embolism excluded without imaging.

CARD 184

High-risk PE with persistent hypotension or shock.

CARD 183

Triple-positive antiphospholipid syndrome, pregnancy, severe renal failure.

CHAPTER 16 · CARD 185

PEITHO

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Provoked PE by surgery

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sPESI 0

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IVC filter

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Post-PE breathlessness at 3 months

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Intermediate-high risk PE

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PH definition

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Precapillary PH

CARD 186

3 months of anticoagulation.

CARD 185

Thrombolysis in intermediate-high risk prevented decompensation but raised bleeding.

CARD 188

Only when anticoagulation is contraindicated.

CARD 187

Low 30-day mortality; possible outpatient care.

CARD 190

RV dysfunction plus raised troponin without hypotension.

CARD 189

Echocardiography and V/Q scan for CTEPH.

CARD 192

PAWP 15 or less and PVR above 2 Wood units.

CARD 191

mPAP above 20 mm Hg.

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Initial PAH therapy, most patients

CHAPTER 17 · CARD 194

Calcium channel blockers in PAH

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Operable CTEPH

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Sotatercept monitoring

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Commonest PH group

CHAPTER 17 · CARD 198

Riociguat contraindication

CHAPTER 17 · CARD 199

Hepatopulmonary syndrome

CHAPTER 17 · CARD 200

HHT lung screening

CARD 194

Only for vasoreactive idiopathic, heritable or drug-associated PAH.

CARD 193

ERA plus PDE5 inhibitor.

CARD 196

Hemoglobin and platelets before doses; telangiectasia and bleeding.

CARD 195

Pulmonary endarterectomy.

CARD 198

PDE5 inhibitors and nitrates.

CARD 197

Group 2, left heart disease.

CARD 200

Contrast echocardiography for arteriovenous malformations.

CARD 199

Intrapulmonary vascular dilatation with hypoxemia worse upright.

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PEXIVAS

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Inhaled treprostinil

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OSA severity

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Apnea

CHAPTER 18 · CARD 205

Hypopnea (AASM recommended)

CHAPTER 18 · CARD 206

Home sleep testing suitability

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SAVE

CHAPTER 18 · CARD 208

SERVE-HF

CARD 202

Approved for PH with interstitial lung disease.

CARD 201

Plasma exchange did not reduce death or end-stage kidney disease.

CARD 204

Airflow fall of 90% or more for at least 10 seconds.

CARD 203

AHI 5 to 14 mild, 15 to 29 moderate, 30 or more severe.

CARD 206

Uncomplicated adults with high pretest probability.

CARD 205

30% airflow fall for 10 seconds with 3% desaturation or arousal.

CARD 208

ASV raised mortality in HFrEF with central apnea.

CARD 207

CPAP did not reduce cardiovascular events.

CHAPTER 18 · CARD 209

Narcolepsy type 1

CHAPTER 18 · CARD 210

Tirzepatide

CHAPTER 18 · CARD 211

Chronic insomnia first line

CHAPTER 18 · CARD 212

Restless legs and ferritin

CHAPTER 18 · CARD 213

Hypoglossal nerve stimulation exclusion

CHAPTER 18 · CARD 214

REM sleep behavior disorder

CHAPTER 18 · CARD 215

Opioids and sleep breathing

CHAPTER 18 · CARD 216

CPAP proven benefits

CARD 210

Approved for moderate to severe OSA with obesity.

CARD 209

Cataplexy or low CSF hypocretin; sleep-onset REM periods.

CARD 212

Iron if ferritin below 75 ng/mL.

CARD 211

Cognitive behavioral therapy for insomnia.

CARD 214

Dream enactment; early sign of synucleinopathy.

CARD 213

Complete concentric collapse at the velum.

CARD 216

Sleepiness, quality of life and blood pressure.

CARD 215

Central apnea and ataxic breathing.

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STOP-Bang

CHAPTER 18 · CARD 218

Oral appliance therapy

CHAPTER 19 · CARD 219

OHS definition

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Bicarbonate screen for OHS

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Stable OHS with severe OSA

CHAPTER 19 · CARD 222

Supine FVC fall

CHAPTER 19 · CARD 223

20/30/40 rule

CHAPTER 19 · CARD 224

Peak cough flow threshold

CARD 218

For patients who cannot tolerate CPAP or prefer an alternative.

CARD 217

Screening questionnaire for obstructive sleep apnea.

CARD 220

Below 27 mmol/L makes OHS unlikely.

CARD 219

BMI 30 or more, sleep-disordered breathing, awake PaCO2 45 mm Hg or more, other causes excluded.

CARD 222

More than 20% to 25% suggests diaphragm weakness.

CARD 221

CPAP suggested first.

CARD 224

Below 270 L/min benefits from cough assistance.

CARD 223

VC below 20 mL/kg, MIP weaker than minus 30, MEP below 40 cm H2O.

CHAPTER 19 · CARD 225

Hypercapnic risk oxygen target

CHAPTER 19 · CARD 226

Phrenic nerve roots

CHAPTER 19 · CARD 227

Bilateral diaphragm paralysis

CHAPTER 19 · CARD 228

Myasthenic crisis treatment

CHAPTER 19 · CARD 229

Duchenne muscular dystrophy

CHAPTER 19 · CARD 230

Kyphoscoliosis

CHAPTER 20 · CARD 231

Pleural plaques

CHAPTER 20 · CARD 232

Engineered stone

CARD 226

C3 to C5.

CARD 225

88% to 92%.

CARD 228

Ventilatory support plus plasma exchange or IVIG.

CARD 227

Severe orthopnea and paradoxical abdominal motion supine.

CARD 230

Chest wall restriction causing hypercapnic failure, first in sleep.

CARD 229

Progressive restriction and nocturnal hypoventilation needing NIV.

CARD 232

Accelerated silicosis outbreaks in young workers.

CARD 231

Marker of asbestos exposure; not premalignant.

CHAPTER 20 · CARD 233

Silicosis risks

CHAPTER 20 · CARD 234

Beryllium lymphocyte proliferation test

CHAPTER 20 · CARD 235

Carbon monoxide testing

CHAPTER 20 · CARD 236

Byssinosis

CHAPTER 20 · CARD 237

Asbestos and smoking

CHAPTER 20 · CARD 238

EVALI

CHAPTER 20 · CARD 239

Silo filler's disease

CHAPTER 20 · CARD 240

Smoke inhalation cyanide clue

CARD 234

Identifies beryllium sensitization.

CARD 233

Tuberculosis, lung cancer and autoimmune disease.

CARD 236

Monday chest tightness from cotton, flax or hemp dust.

CARD 235

Carboxyhemoglobin by co-oximetry.

CARD 238

Linked to vitamin E acetate in illicit THC vaping products.

CARD 237

Multiplicative lung cancer risk.

CARD 240

Severe lactic acidosis; hydroxocobalamin.

CARD 239

Nitrogen dioxide lung injury.

CHAPTER 21 · CARD 241

Lung-protective ventilation

CHAPTER 21 · CARD 242

PROSEVA

CHAPTER 21 · CARD 243

FLORALI

CHAPTER 21 · CARD 244

NIV in COPD exacerbation

CHAPTER 21 · CARD 245

Global ARDS definition

CHAPTER 21 · CARD 246

High peak, normal plateau

CHAPTER 21 · CARD 247

High peak and plateau

CHAPTER 21 · CARD 248

FACTT

CARD 242

Prone positioning reduced mortality with PaO2/FiO2 below 150.

CARD 241

6 mL/kg predicted body weight, plateau 30 cm H2O or less.

CARD 244

pH 7.35 or less with PaCO2 above 45 mm Hg.

CARD 243

High-flow nasal oxygen in hypoxemic respiratory failure.

CARD 246

Increased resistance: bronchospasm, secretions, tube obstruction.

CARD 245

Includes HFNO at 30 L/min or more and SpO2/FiO2 of 315 or less.

CARD 248

Conservative fluids after shock increased ventilator-free days.

CARD 247

Reduced compliance: pneumothorax, mainstem intubation, worsening lung.

CHAPTER 21 · CARD 249

Spontaneous breathing trial

CHAPTER 21 · CARD 250

ROSE

CHAPTER 21 · CARD 251

EOLIA

CHAPTER 21 · CARD 252

Late steroids in ARDS

CHAPTER 21 · CARD 253

Dynamic hyperinflation

CHAPTER 21 · CARD 254

Predicted body weight

CHAPTER 22 · CARD 255

Septic shock first vasopressor

CHAPTER 22 · CARD 256

Initial sepsis fluids

CARD 250

Routine early neuromuscular blockade did not reduce mortality.

CARD 249

30 to 120 minutes; RSBI below 105 as screen.

CARD 252

Methylprednisolone after 14 days increased mortality.

CARD 251

ECMO rescue for very severe ARDS at expert centers.

CARD 254

From height and sex; used to set tidal volume.

CARD 253

Intrinsic PEEP, rising plateau and hypotension.

CARD 256

At least 30 mL/kg crystalloid in the first 3 hours.

CARD 255

Norepinephrine, initial MAP target 65 mm Hg.

CHAPTER 22 · CARD 257

Antibiotic timing in septic shock

CHAPTER 22 · CARD 258

ICU glucose target

CHAPTER 22 · CARD 259

NICE-SUGAR

CHAPTER 22 · CARD 260

Transfusion threshold

CHAPTER 22 · CARD 261

Fluid responsiveness

CHAPTER 22 · CARD 262

ANDROMEDA-SHOCK

CHAPTER 22 · CARD 263

ICU delirium prevention

CHAPTER 22 · CARD 264

Post-intensive care syndrome

CARD 258

Start insulin at 180 mg/dL; target 144 to 180 mg/dL.

CARD 257

Within 1 hour of recognition.

CARD 260

Hemoglobin 7 g/dL for most stable ICU adults.

CARD 259

Intensive glucose control increased mortality.

CARD 262

Capillary refill-targeted resuscitation vs lactate.

CARD 261

Passive leg raise with stroke volume change.

CARD 264

New physical, cognitive or mental impairment after critical illness.

CARD 263

ABCDEF bundle; antipsychotics do not prevent it.

CHAPTER 22 · CARD 265

Stress ulcer prophylaxis

CHAPTER 22 · CARD 266

Sepsis-3 septic shock

CHAPTER 22 · CARD 267

Balanced crystalloids

CHAPTER 22 · CARD 268

Second vasopressor

CHAPTER 23 · CARD 269

Main limit on long-term transplant survival

CHAPTER 23 · CARD 270

Bronchiolitis obliterans syndrome after lung transplant

CHAPTER 23 · CARD 271

Primary graft dysfunction

CHAPTER 23 · CARD 272

Acute cellular rejection

CARD 266

Vasopressors for MAP 65 and lactate above 2 mmol/L without hypovolemia.

CARD 265

For patients at bleeding risk, not universal.

CARD 268

Add vasopressin rather than escalating norepinephrine.

CARD 267

Suggested over saline in sepsis.

CARD 270

Persistent FEV1 fall of 20% or more from baseline, obstructive.

CARD 269

Chronic lung allograft dysfunction.

CARD 272

Perivascular lymphocytic infiltrates on transbronchial biopsy.

CARD 271

Allograft injury within 72 hours.

CHAPTER 23 · CARD 273

Composite allocation score

CHAPTER 23 · CARD 274

BOS after HCT

CHAPTER 23 · CARD 275

FAM

CHAPTER 23 · CARD 276

DAH after HCT

CHAPTER 23 · CARD 277

Transplant contraindication

CHAPTER 23 · CARD 278

Post-transplant prophylaxis

CHAPTER 24 · CARD 279

EAGLES

CHAPTER 24 · CARD 280

Dry powder inhaler technique

CARD 274

Pulmonary chronic graft-versus-host disease.

CARD 273

Continuous ranking since March 2023.

CARD 276

Progressively bloodier lavage, often around engraftment.

CARD 275

Fluticasone, azithromycin and montelukast for BOS after HCT.

CARD 278

Pneumocystis, CMV by serostatus, often antifungal.

CARD 277

Recent high-risk malignancy, uncontrolled infection, poor adherence or support.

CARD 280

Fast, forceful inhalation.

CARD 279

Varenicline most effective; no excess neuropsychiatric events.

CHAPTER 24 · CARD 281

Pressurized inhaler technique

CHAPTER 24 · CARD 282

Pulmonary rehabilitation core

CHAPTER 24 · CARD 283

Oxygen target, most acute adults

CHAPTER 24 · CARD 284

Spacer vs nebulizer

CHAPTER 24 · CARD 285

LAMA adverse effects

CHAPTER 24 · CARD 286

Home oxygen and smoking

CHAPTER 25 · CARD 287

Positive likelihood ratio

CHAPTER 25 · CARD 288

Negative likelihood ratio

CARD 282

Supervised exercise training.

CARD 281

Slow inhalation and 10-second breath hold.

CARD 284

Equally effective for most acute bronchodilation.

CARD 283

94% to 98%.

CARD 286

Burn and fire risk.

CARD 285

Dry mouth, urinary retention, angle-closure glaucoma.

CARD 288

1 minus sensitivity divided by specificity.

CARD 287

Sensitivity divided by 1 minus specificity.

CHAPTER 25 · CARD 289

Number needed to treat

CHAPTER 25 · CARD 290

Noninferiority trial

CHAPTER 25 · CARD 291

Intention-to-treat

CHAPTER 25 · CARD 292

Lead-time bias

CHAPTER 25 · CARD 293

GRADE certainty

CHAPTER 25 · CARD 294

Withholding vs withdrawing

CHAPTER 25 · CARD 295

Substituted judgment

CHAPTER 25 · CARD 296

Keystone ICU program

CARD 290

Tests whether new treatment is not worse than a margin.

CARD 289

1 divided by the absolute risk reduction.

CARD 292

Earlier diagnosis lengthens apparent survival without delaying death.

CARD 291

Analysis by randomized group; preserves randomization.

CARD 294

Ethically equivalent.

CARD 293

High, moderate, low, very low; downgraded for bias, inconsistency, indirectness, imprecision, publication bias.

CARD 296

Central line checklist with safety culture cut infections.

CARD 295

Surrogate decides as the patient would have.

CHAPTER 25 · CARD 297

Hazard ratio 0.75

CHAPTER 25 · CARD 298

Composite endpoint caution

CHAPTER 25 · CARD 299

Disclosure of error

CHAPTER 25 · CARD 300

Ventilator bundle

CARD 298

May be driven by frequent, less important components.

CARD 297

25% relative reduction in event rate.

CARD 300

Minimal sedation, paired breathing trials, head elevation, mobility.

CARD 299

Honest explanation, apology and prevention steps.