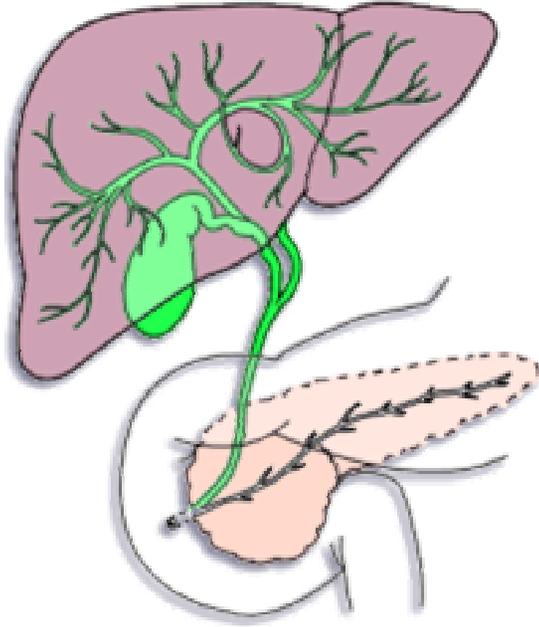


The Role of the Basic Sciences in Resident Training



Handout download:

<http://www.oucom.ohiou.edu/dbms-witmer/gs-rpac.htm>

26 July 2005

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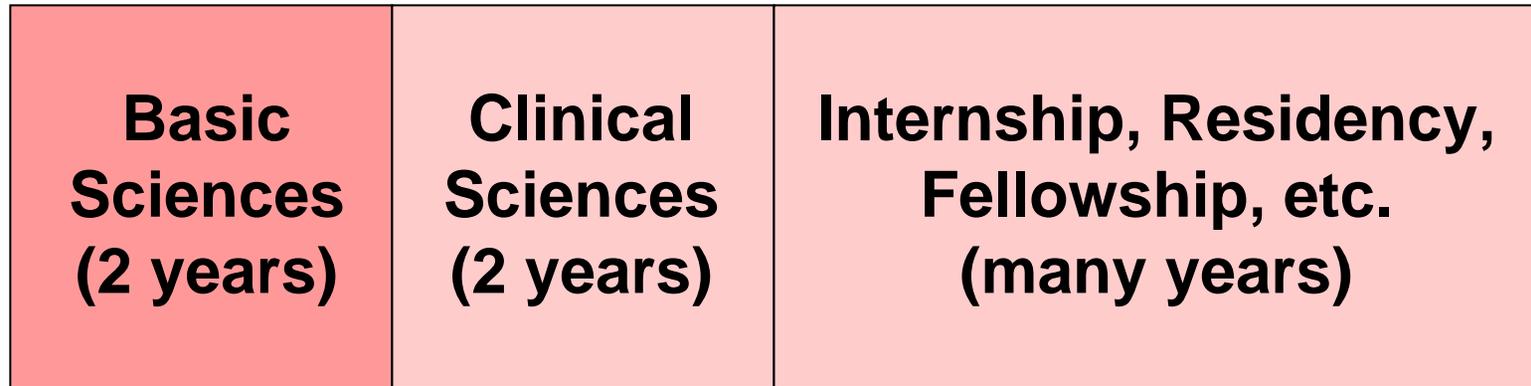
Athens, Ohio 45701

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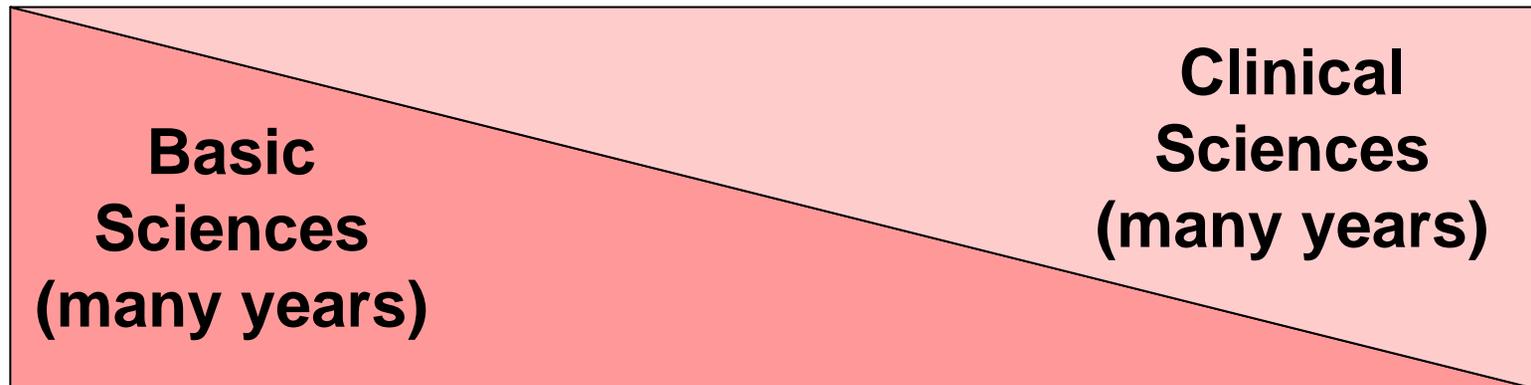
Basic Sciences in Medical Training

Traditional Approach



time

OUCOM Approach — Continuum of Medical Education



time

Basic Sciences in Resident Training

Justification

- Provide the scientific foundations for clinical practice
- Review and refresh relevant basic science material
- Provide clinically relevant basic science that may be more detailed and more focused than that provided in med school
- Stimulate and affirm the requirement of understanding the evidentiary basis of clinical practice (Evidence-Based Medicine)
- Provide a teaching link between more basic-science-oriented medical students and more clinically-oriented attendings
- Mandated by CORE Bylaws

Basic Sciences in GS-RPAC

- Basic Science Liaison: Lawrence M. Witmer, PhD
 - Works with Residency Directors to develop curriculum
 - Recruits basic science presenters (mostly OUCOM Athens)
 - Assists presenters with development and revision of presentations
- Typical Format: One-hour basic science presentation during the course of the Educational Day, usually the first presentation
- 66 Surgery basic science sessions since 1997

Basic Sciences in GS-RPAC

Example

<u>Date</u>	<u>Educational Day Topic</u>	<u>Moderator</u>	<u>Basic Science Presenter</u>	<u>Title</u>	<u>Date</u>
Jul-05	Orientation	Meshekow	L. M. Witmer	The role of basic sciences in resident training.	07/26/05
Mar-05	Upper GI	Clarey	F. Nowak	Endocrine tumors of the gastrointestinal system.	03/22/05
Feb-05	Gynecology	Galante	P. M. O'Connor	Female pelvic anatomy: basic organization and clinical considerations.	02/22/05
Jan-05	Liver/Spleen	Galante	J. Blazyk	Clinical manifestations of heme degradation.	01/25/05
Nov-04	Thoracic	Galante	L. M. Witmer	Clinical anatomy of the pleural cavity & mediastinum.	11/23/04
Oct-04	Trauma	Clarey	R. Klabunde	The pathophysiology of hemorrhagic shock.	10/26/04
Jun-04	Breast Disease	Galante	F. V. Nowak	Breast cancer: an endocrinologist's perspective.	06/22/04
Apr-04	Rectal/Anus	Clarey	L. M. Witmer	Navigating anorectal anatomy: terms, planes, spaces, structures.	04/27/04
Mar-04	Vascular	Wehmann	L. M. Witmer	Clinical anatomy of the aorta	03/23/04
Feb-04	Infectious Disease	Meshekow	B. Biegalko	Blood-borne viruses: transmission in surgery.	02/24/04
Jan-04	Pancreas	Classen	F. Nowak	Eat to live: The role of the pancreas.	01/27/04

Basic Sciences in GS-RPAC

Website with handout downloads:

<http://www.oucom.ohiou.edu/dbms-witmer/gs-rpac.htm>

GS-RPAC Basic Science Sessions - Mozilla Firefox

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General Surgery RPAC Basic Science Integration Sessions

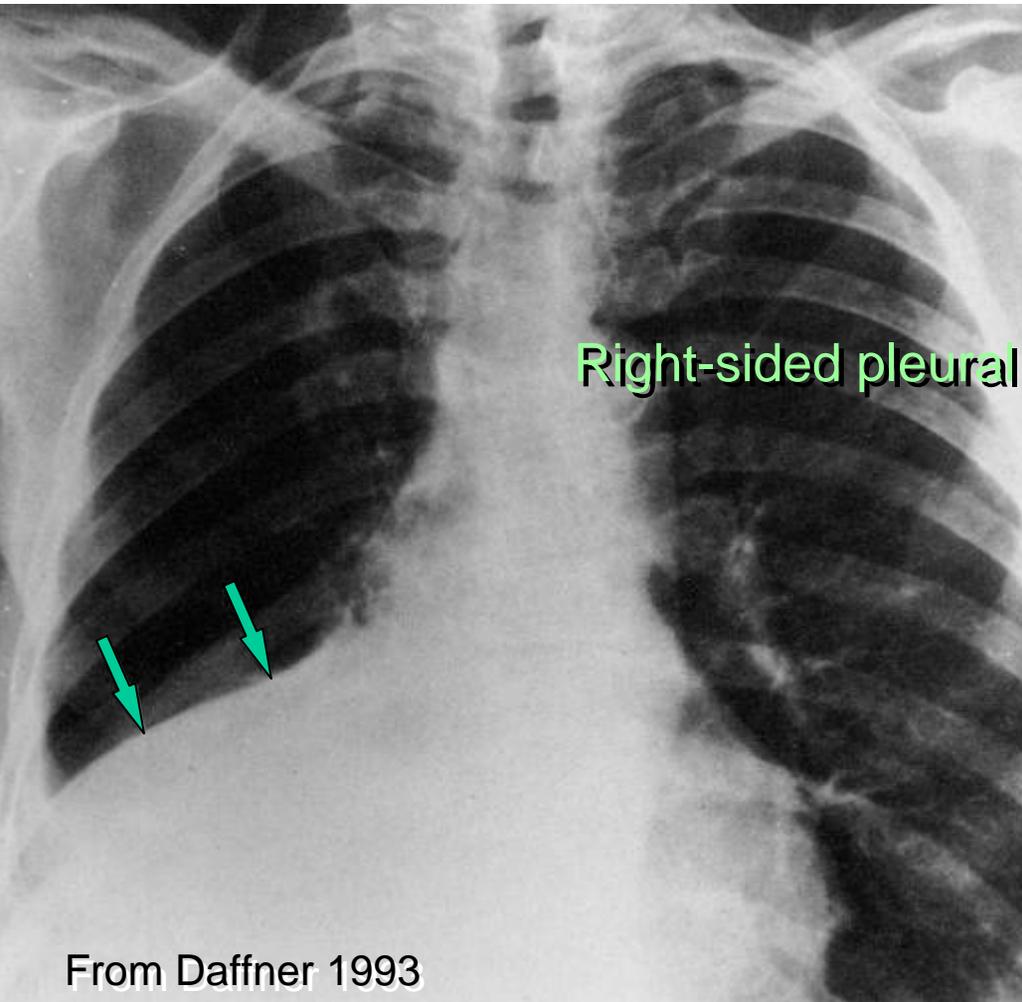
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Oct-03	Endocrine	Galante	L. M. Witmer	Clinical anatomy of the thyroid and adrenal glands.	10/28/03
Sep-03	Critical Care	Clarey	R. Klabunde	Pathophysiology of cardiogenic shock.	09/23/03
				Clinical anatomy of the	

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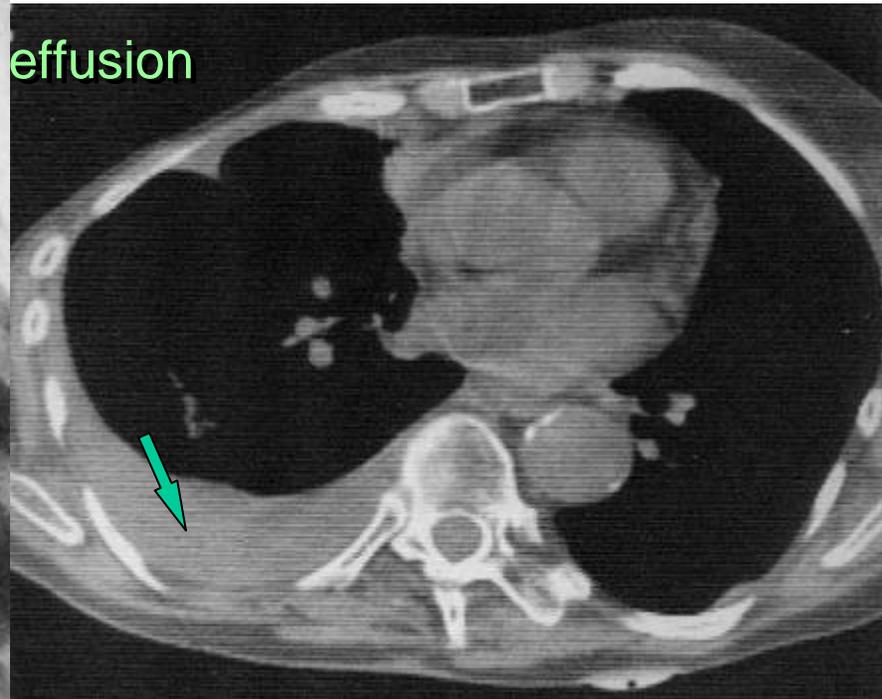
Pleural Diseases & Signs 1: Pleural Effusion

Example

- Accumulation of fluid in the pleural space
- Transudative vs. exudative effusion
- Empyema as potential sequelae to exudative effusion

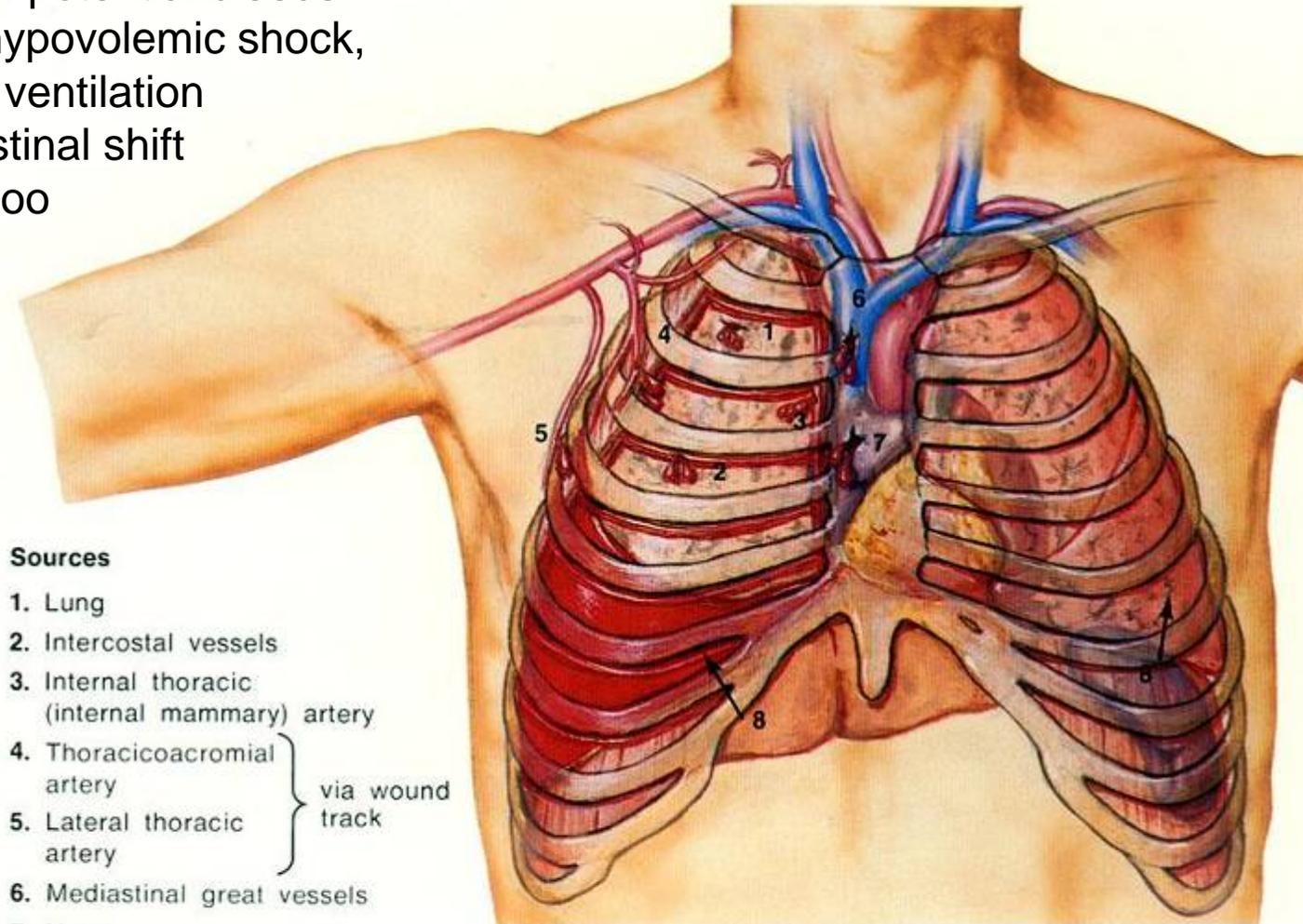


Right-sided pleural effusion



Pleural Diseases & Signs 2: Hemothorax

- Intrathoracic bleeding (e.g., trauma)
- Numerous sources of potential bleeds
- Large hemothorax: hypovolemic shock, restricted ipsilateral ventilation, contralateral mediastinal shift
- Clotting may not be too problematic (except for catheters)

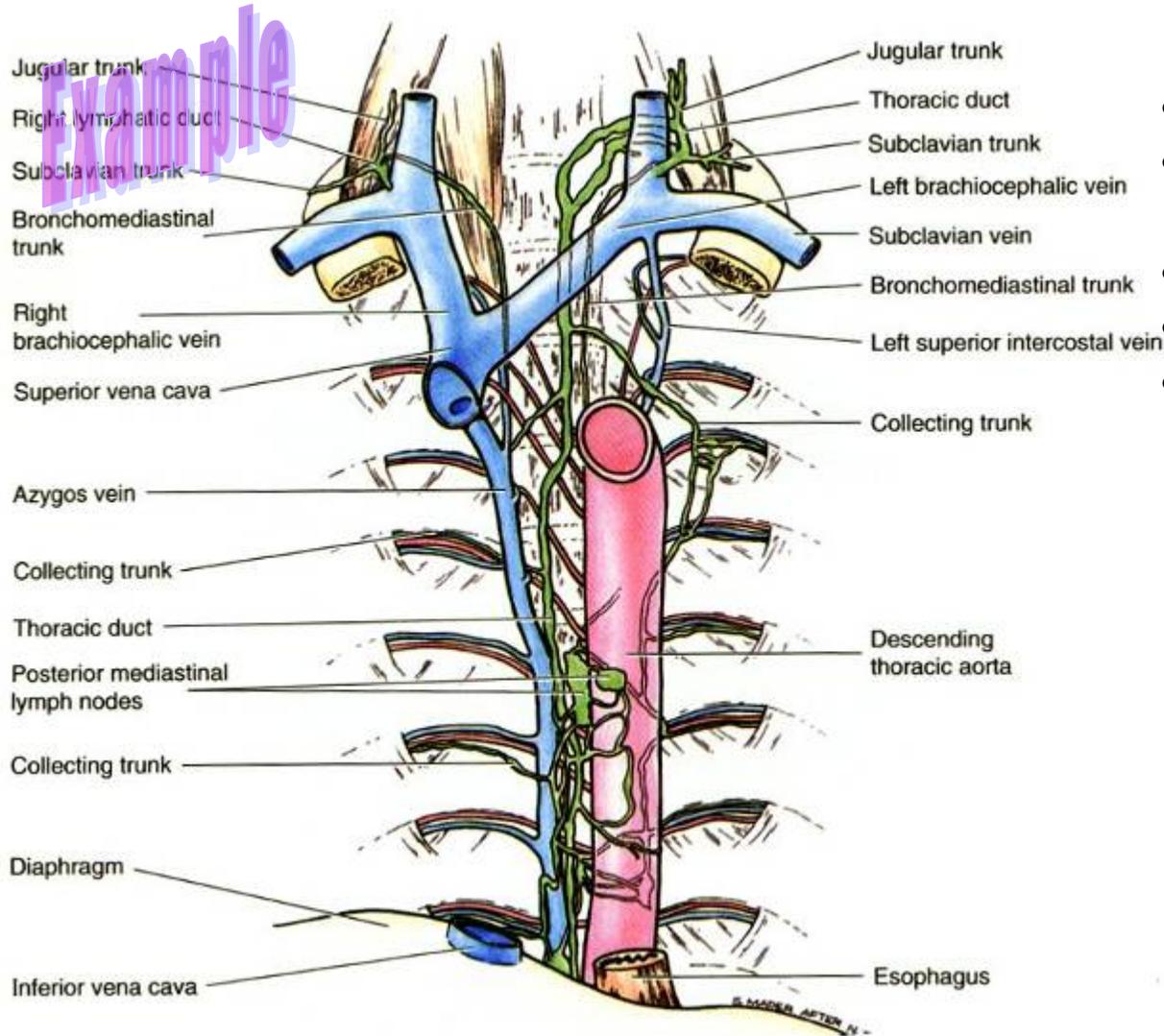


Sources

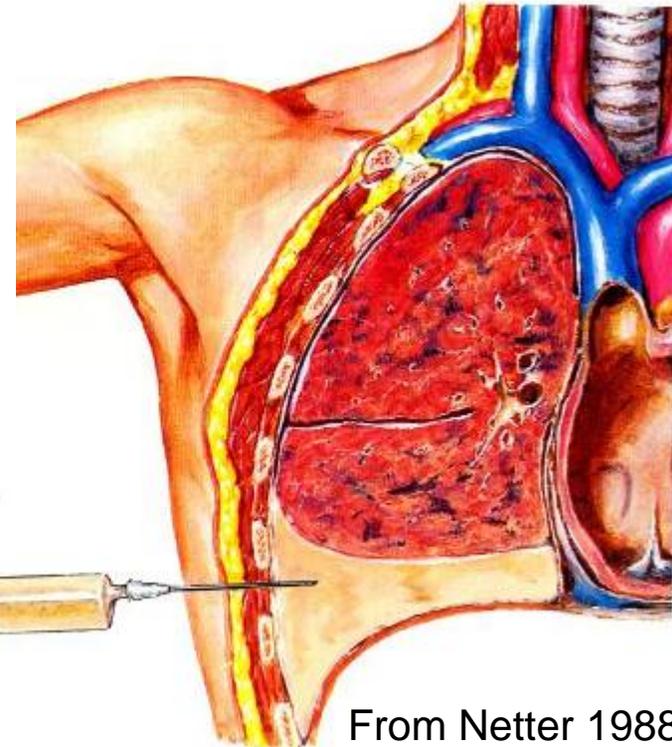
1. Lung
 2. Intercostal vessels
 3. Internal thoracic (internal mammary) artery
 4. Thoracoacromial artery
 5. Lateral thoracic artery
 6. Mediastinal great vessels
 7. Heart
 8. Abdominal structures (liver, spleen) via diaphragm
- via wound track

From Netter 1988

Pleural Diseases & Signs 3: Chylothorax



- Leakage of lymph
- Usually a result of surgical trauma during mediast. proc.
- Traumatic vs nontraumatic
- Traumatic: 2/3, unilateral
- Nontraumatic: 1/3, bilateral, assoc. with SVC thrombosis



From Moore & Dalley 1999

From Netter 1988

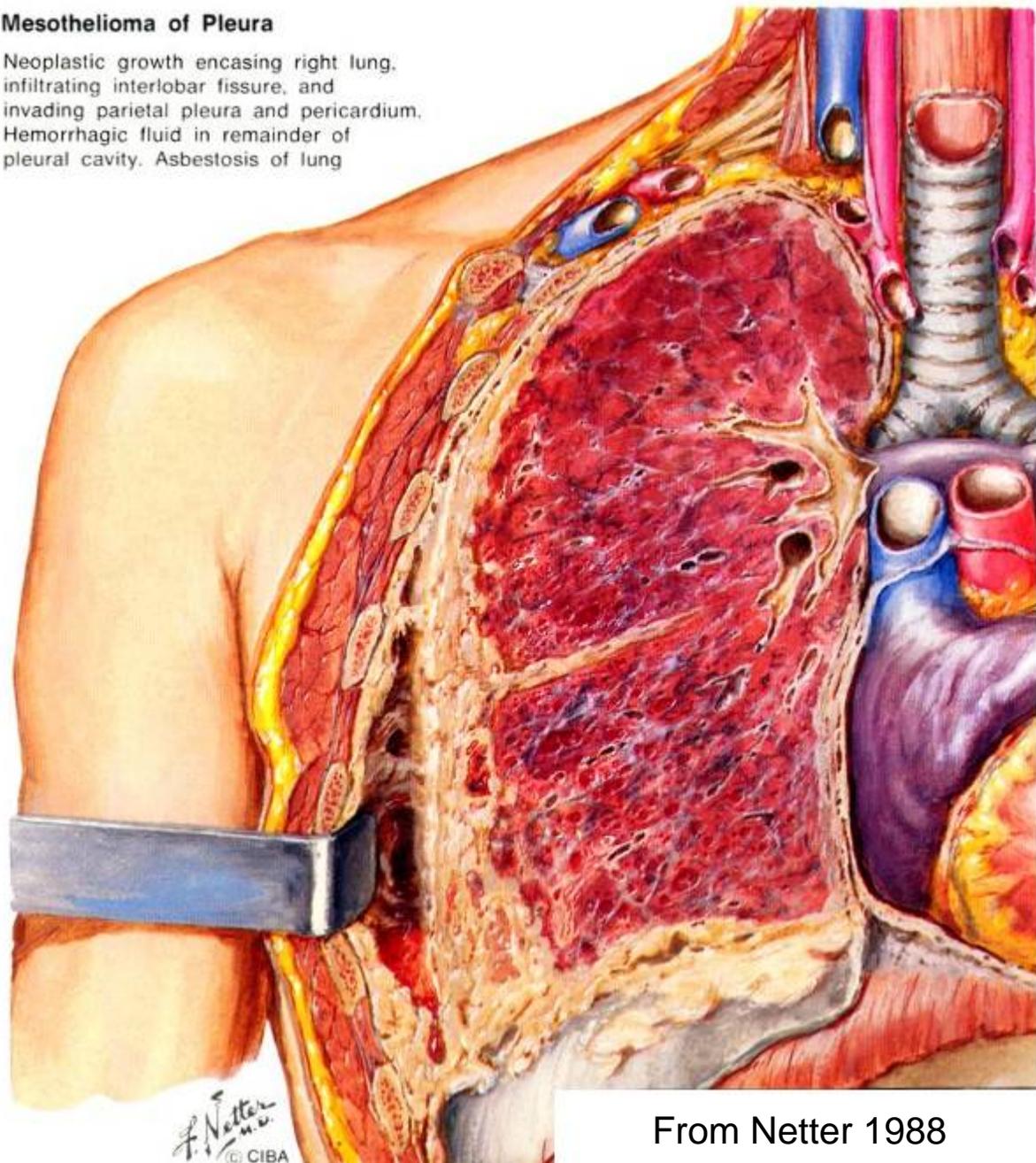
Pleural Diseases & Signs 4: Malignant Mesothelioma

Example

Mesothelioma of Pleura

Neoplastic growth encasing right lung, infiltrating interlobar fissure, and invading parietal pleura and pericardium. Hemorrhagic fluid in remainder of pleural cavity. Asbestosis of lung

- Neoplasm of pleural serosa
- Linked to asbestos exposure
- Coalescence of pleural plaques
- May be restricted to parietal pleura but can involve visceral pleura
- Can lead to contracture of all structures in affected hemithorax

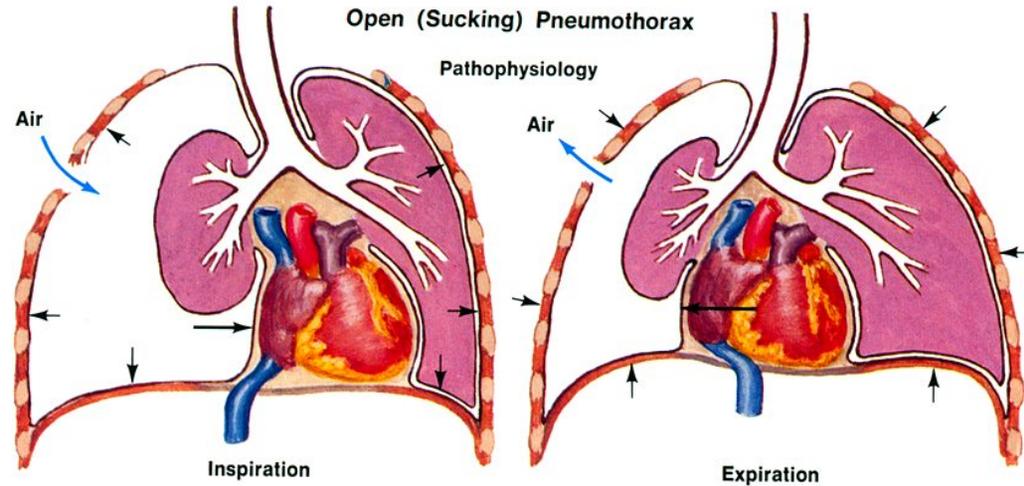


From Netter 1988

Pleural Diseases & Signs 5: Pneumothorax

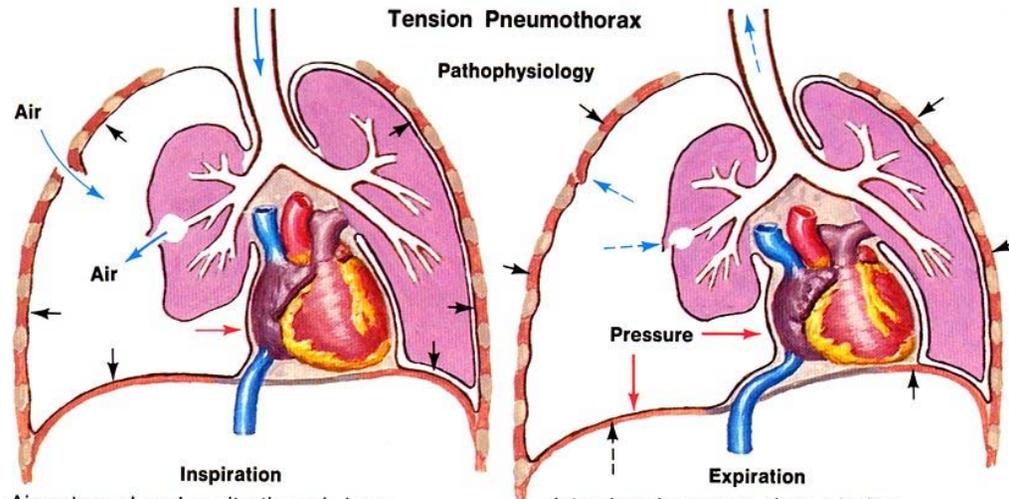
Example

- Presence of free air or gas in the pleural cavity
- Types of pneumothorax
 - Open pneumothorax
 - Spontaneous pneumothorax
 - Tension pneumothorax
- Collapse of ipsilateral lung due to pressure change & disruption of surface tension
- Potential for mediastinal shifts



Air enters pleural cavity through open, sucking chest wound. Negative pleural pressure is lost, permitting collapse of ipsilateral lung and reducing venous return to heart. Mediastinum shifts, compressing opposite lung

As chest wall contracts and diaphragm rises, air is expelled from pleural cavity via wound. Mediastinum shifts to affected side and mediastinal flutter further impairs venous return by distortion of venae cavae



Air enters pleural cavity through lung wound or ruptured bleb (or occasionally via penetrating chest wound) with valvelike opening. Ipsilateral lung collapses and mediastinum shifts to opposite side, compressing contralateral lung and impairing its ventilating capacity

Intrapleural pressure rises, closing valvelike opening, thus preventing escape of pleural air. Pressure is thus progressively increased with each breath. Mediastinal and tracheal shifts are augmented, diaphragm is depressed, and venous return is impaired by increased pressure and vena caval distortion

Basic Sciences in Resident Training

Summary

- Basic sciences should remain a part of the continuum of medical education
- Pedagogical reasons for basic science training
- Format: relevant basic science presentation as part of the Educational Day program
- Example from recent program on clinical anatomy of the thorax

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- Moore, K. L. and A. F. Dalley. 1999. *Clinically Oriented Anatomy, 6th Ed.* Lippincott, Williams & Wilkins, Baltimore.
- Netter, F. H. 1988. *The CIBA Collection of Medical Illustrations, Volume 7: Respiratory System*. CIBA-Geigy, Summit.