The Role of the Basic Sciences in Resident Training

Handout download:
http://www.oucom.ohiou.edu/dbms-witmer/gs-rpac.htm

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Basic Sciences in Medical Training

Traditional Approach

<table>
<thead>
<tr>
<th>Basic Sciences (2 years)</th>
<th>Clinical Sciences (2 years)</th>
<th>Internship, Residency, Fellowship, etc. (many years)</th>
</tr>
</thead>
</table>

OUCOM Approach — Continuum of Medical Education

<table>
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time —————————————————— 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
## Example

<table>
<thead>
<tr>
<th>Date</th>
<th>Educational Day</th>
<th>Moderator</th>
<th>Basic Science Presenter</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jul-05</td>
<td>Orientation</td>
<td>Meshekow</td>
<td>L. M. Witmer</td>
<td>The role of basic sciences in resident training.</td>
<td>07/26/05</td>
</tr>
<tr>
<td>Mar-05</td>
<td>Upper GI</td>
<td>Clarey</td>
<td>F. Nowak</td>
<td>Endocrine tumors of the gastrointestinal system.</td>
<td>03/22/05</td>
</tr>
<tr>
<td>Feb-05</td>
<td>Gynecology</td>
<td>Galante</td>
<td>P. M. O'Connor</td>
<td>Female pelvic anatomy: basic organization and clinical considerations.</td>
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<td>Jan-05</td>
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<td>Clinical manifestations of heme degradation.</td>
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<td>Oct-04</td>
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<td>The pathophysiology of hemorrhagic shock.</td>
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<tr>
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<td>Breast Disease</td>
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<td>Breast cancer: an endocrinologist's perspective.</td>
<td>06/22/04</td>
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<tr>
<td>Apr-04</td>
<td>Rectal/Anus</td>
<td>Clarey</td>
<td>L. M. Witmer</td>
<td>Navigating anorectal anatomy: terms, planes, spaces, structures.</td>
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<td>Clinical anatomy of the aorta</td>
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<td>Classen</td>
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**Basic Sciences in GS-RPAC**

Website with handout downloads: 
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### General Surgery RPAC

**Basic Science Integration Sessions**

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<td>Endocrine</td>
<td>Galante</td>
<td>L. M. Witmer</td>
<td>Clinical anatomy of the thyroid and adrenal glands</td>
<td>10/20/03</td>
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<tr>
<td>Sep-03</td>
<td>Critical Care</td>
<td>Clary</td>
<td>R. Klabunde</td>
<td>Pathophysiology of cardiogenic shock</td>
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*Ohio University Home*
*OUCOM Home*
*CORE Home*
*Biomedical Sciences Home*
*Witmer MedEd Home*
Pleural Diseases & Signs 1: Pleural Effusion

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

From Daffner 1993

Right-sided pleural effusion

From Daffner 1993
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. Thoracicoacromial artery
5. Lateral thoracic artery
6. Mediastinal great vessels
7. Heart
8. Abdominal structures (liver, spleen) via diaphragm

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
• 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

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

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

From Netter 1988
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