PH IN THE INTENSIVE CARE UNIT

John Granton
UHN, Mount Sinai and Women’s College Hospitals
- Actelion
- Bayer
- United Therapeutics
- GSK
- Lilly
- Pfizer
- Ikaria
Objectives

- Review the diagnosis and classification of PH
- Understand the importance of a thoughtful hemodynamic approach
- Improve understanding and relevance of PH in my ICU practice
Normal circulation...
That which does not kill me postpones the inevitable

ADVERSITY

www.despair.com
Characteristic intracardiac pressure wave forms during passage through the heart.
PVR problem
Reduced rebound PH in neonates after stopping NO

Atz et al
Anesthesiology 1999, 24:231
Characteristic intracardiac pressure wave forms during passage through the heart
Pulmonary compliance = $\frac{SV}{\Delta P}$
Pulmonary Capillary Wedge Pressure Augments Right Ventricular Pulsatile Loading

Ryan J. Tedford, MD; Paul M. Hassoun, MD; Stephen C. Mathai, MD; Reda E. Girgis, MD; Stuart D. Russell, MD; David R. Thiemann, MD; Oscar H. Cingolani, MD; James O. Mudd, MD; Barry A. Borlaug, MD; Margaret M. Redfield, MD; David J. Lederer, MD; David A. Kass, MD

Circulation

2012;125:289–297
Age-related increases in PA pressure in the community

Circulation. 2009;119:2663-2670
Figure 1. PCWP increased to a greater extent in HFpEF compared with NCD with leg elevation and during exercise (A). PCWP returned to baseline almost immediately in recovery. LVEDP (B) and mean PAP (C) also rose with exercise more dramatically in the HFpEF group (P for exercise change between groups).
Characteristic intracardiac pressure wave forms during passage through the heart.
Right ventricular function during high-frequency oscillatory ventilation in adults with acute respiratory distress syndrome


Christophe Guervilly, MD; Jean-Marie Forel, MD; Sami Hraiech, MD; Didier Demory, MD; Jérôme Allardet-Servent, MD; Mélanie Adda, MD; Karine Barreau-Baumstark, MD; Matthias Castanier, MD; Laurent Papazian, MD, PhD; Antoine Roch, MD, PhD

% of patients

- RV dysfunction
- RV failure

<table>
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<th>Condition</th>
<th>CMV pre</th>
<th>HFO + 5</th>
<th>HFO + 10</th>
<th>HFO + 15</th>
<th>CMV post</th>
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<td>RV dysfunction</td>
<td>50</td>
<td>40</td>
<td><strong>60</strong></td>
<td><strong>70</strong></td>
<td>50</td>
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<tr>
<td>RV failure</td>
<td>20</td>
<td>20</td>
<td>20</td>
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Positive end-expiratory pressure titration in acute respiratory distress syndrome patients: Impact on right ventricular outflow impedance evaluated by pulmonary artery Doppler flow velocity measurements

Jean-Marie Schmitt, MD; Antoine Vieillard-Baron, MD; Roch Augarde, MD; Sebastien Prin, MD; Bernard Page, MD; François Jardin, MD
Atelectasis Causes Vascular Leak and Lethal Right Ventricular Failure in Uninjured Rat Lungs

Michelle Duggan, Conán L. McCaul, Patrick J. McNamara, Doreen Engelberts, Cameron Ackerley, and Brian P. Kavanagh

The Lung Biology Program, The Research Institute, and the Departments of Critical Care Medicine, Anaesthesia, Pediatrics, and Pathology and Laboratory Medicine, The Hospital for Sick Children and the Interdepartmental Division of Critical Care Medicine, University of Toronto, Toronto, Ontario, Canada

Am J Respir Crit Care Med. 2003 167(12):1633-40
Prerecruitment RV function

Postrecruitment RV Function

Continuous Positive Airway Pressure for Treatment of Respiratory Complications After Abdominal Surgery

A Systematic Review and Meta-Analysis


Gabriela P. Ferreyra, RT,* Jacopo Baussano, MD, PhD,†† Vincenzo Squadrone, MD,* Lorenzo Richiardi, MD, PhD,§ Giovana Marchiario, MD,* Lorenzo Del Sorbo, MD,* Luciana Mascia, MD, PhD,* Franco Merletti, MD, PhD,§ and V. Marco Ranieri, MD*
HEY, DOC... IS CIALIS RIGHT FOR ME?