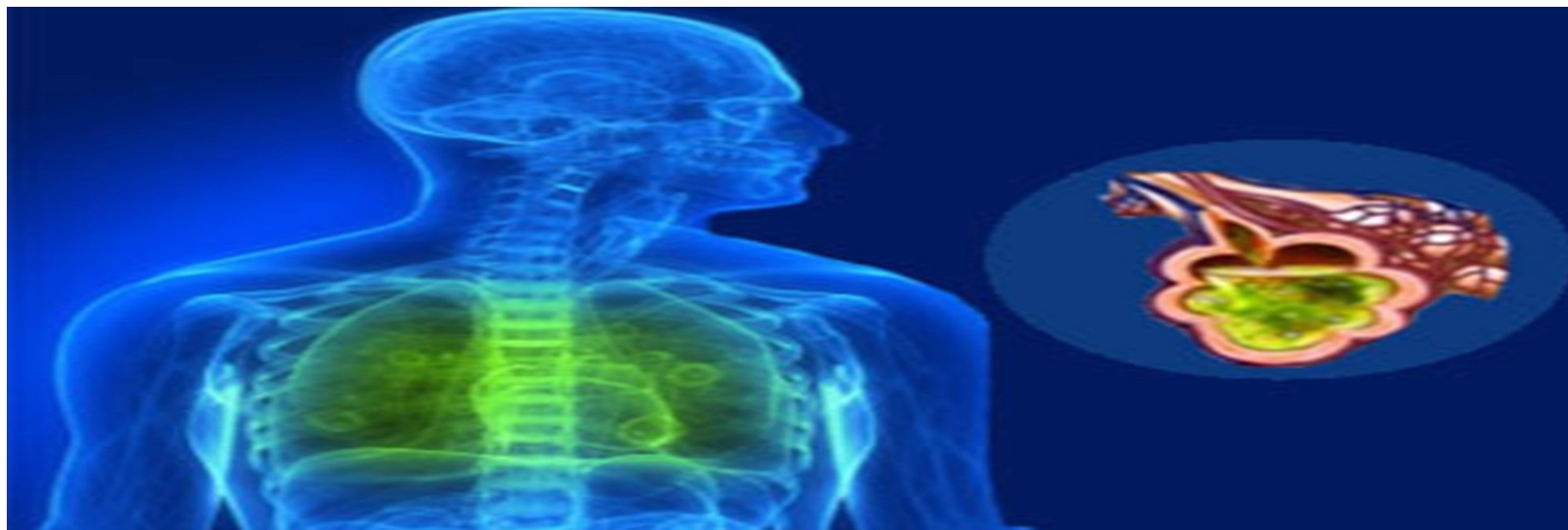




ARDS
D-r Biljana
Kuzmanovska
Klinika za Anestezija
Reanimacija i
Intenzivno Lekuvawe

ARDS

- Shock lungs
- Belo belodrobje
- Sindrom na peperutka
- Sindrom na adultni hijalini membrani
- Sindrom na kongestivni atelektazi
- Adulten



ALI i ARDS

definicija

Ne postoji medunarodno prifadena definicija za ALI i ARDS

Amerikansko - Evropska Konsenzus Konferencija za ARDS
(1994):

ALI: Sindrom na akutna i perzistentna belodrobna inflamacija so
zgolemena vaskularna permeabilnost:

- Akuten po~etok
- Bilateralni infiltrati so belodroben edem
- $\text{PaO}_2 / \text{FiO}_2$ **200 – 300**
- $\text{PCWP} < 18 \text{ mmHg}$ - Nema znaci za pove~en pritisok vo leva predkomora

ARDS - $\text{PaO}_2 / \text{FiO}_2 < 200$

Berlinska Definicija

Using a consensus process, a panel of experts convened in 2011 (an initiative of the European Society of Intensive Care Medicine endorsed by the American Thoracic Society and the Society of Critical Care Medicine) developed the Berlin Definition

A draft definition proposed 3 mutually exclusive categories of ARDS based on degree of hypoxemia:

mild ($\text{PaO}_2/\text{FIO}_2 \leq 300 \text{ mm Hg}$),

Epidemiologija

20% od mehani~ki ventiliranih pacienti gi ispolnuvat kriteriumite za ARDS

Frutos-Vivar F et al. Curr Opin Crit Care 2004 Feb;10 (1);1-6

SAD - 190 600 slu~ai na ARDS godi{no

74 500 zavr{uvat so smrten ishod

Rubinfeld GD et al. N Engl J Med 2005 Oct 20; 353 (16): 1685-93

Stapkata na mortalitet varira od 25- 58%

MacCallum NS et al. Curr Opin Crit Care 2005 Feb;11 (1);43-9

ARDS pretstavuva klinička i patofiziološka paradigma na povreda na belite drobovi koja ima različna etiologija:

Sepsa

Pnevmonija

Aspiracija

Silna trauma

Izgorenici

Transfuzija na krv

Pankreatitis

Davewe

Inhalacija na gasovi

Belodrobna kontuzija

Transplantacija na

koskena srcevina

Opstrukcija na di{en

pat

Primaren i sekundaren ARDS

Primaren
(pulmonalen) ARDS

- direktna lezija na
belodrobno tkivo

***Primarnoto
o{tetuvawe e na***

Sekundaren
(ekstrapulmonalen)
ARDS

- indirektna lezija na
belodrobno tkivo,
rezultat na sistemski
inflamatoren odgovor

***Primarnoto
o{tetuvawe e na***

Patofiziologija na ARDS

- ***Primaren:***

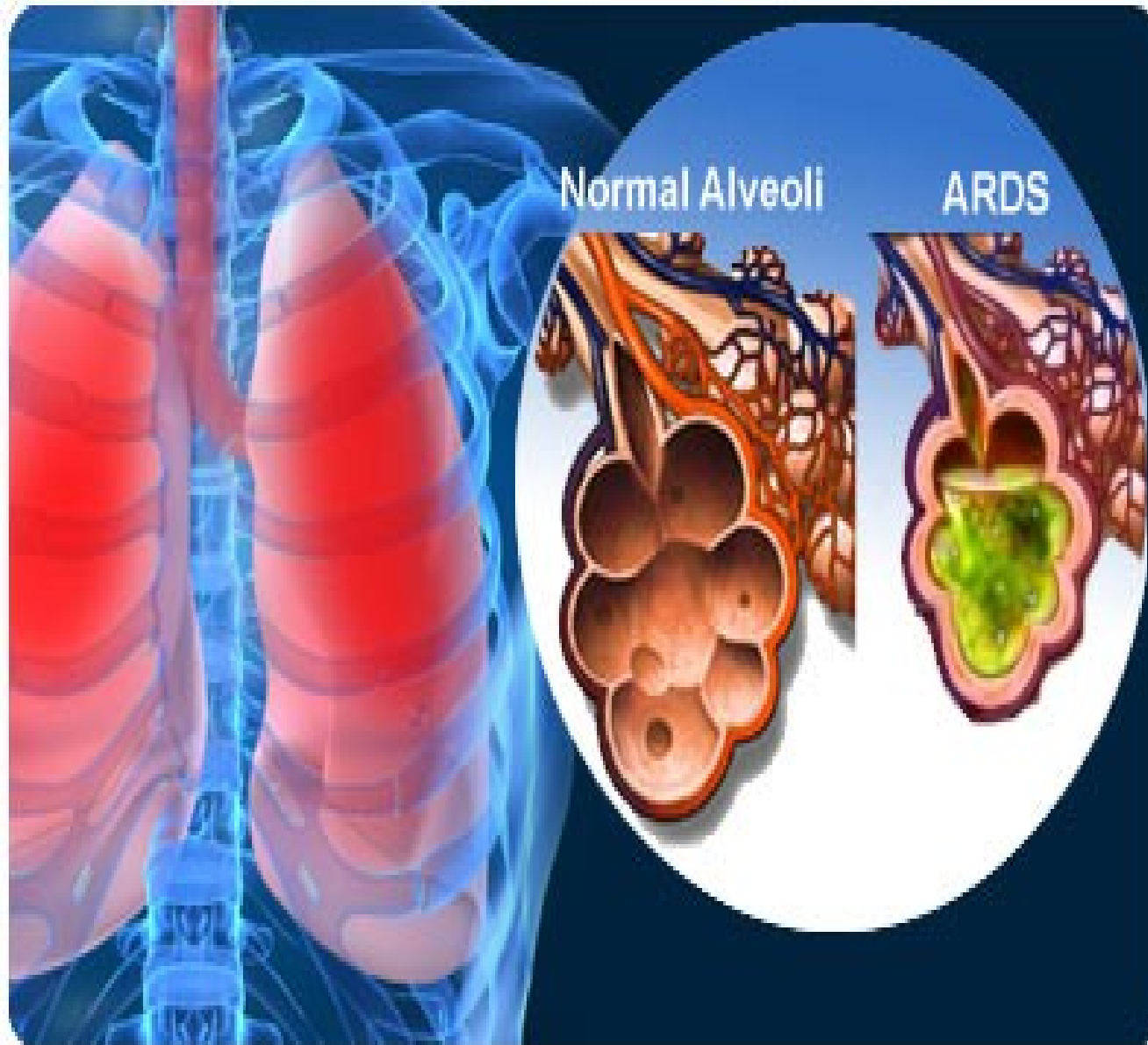
- Aktivacija na alveolarnite makrofagi i inflamatorni odgovor

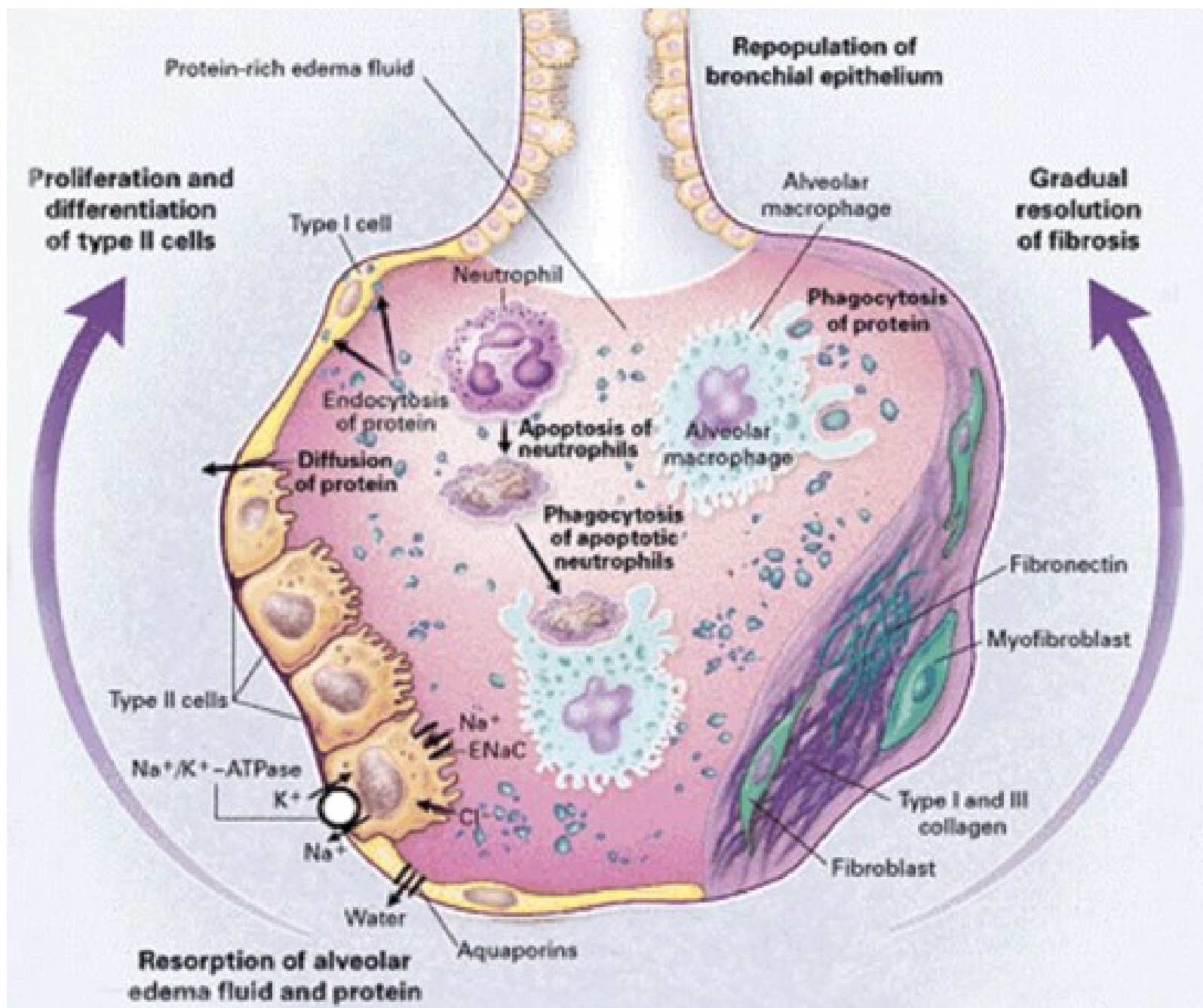
- Intraalveolaren edem i prisustvo na

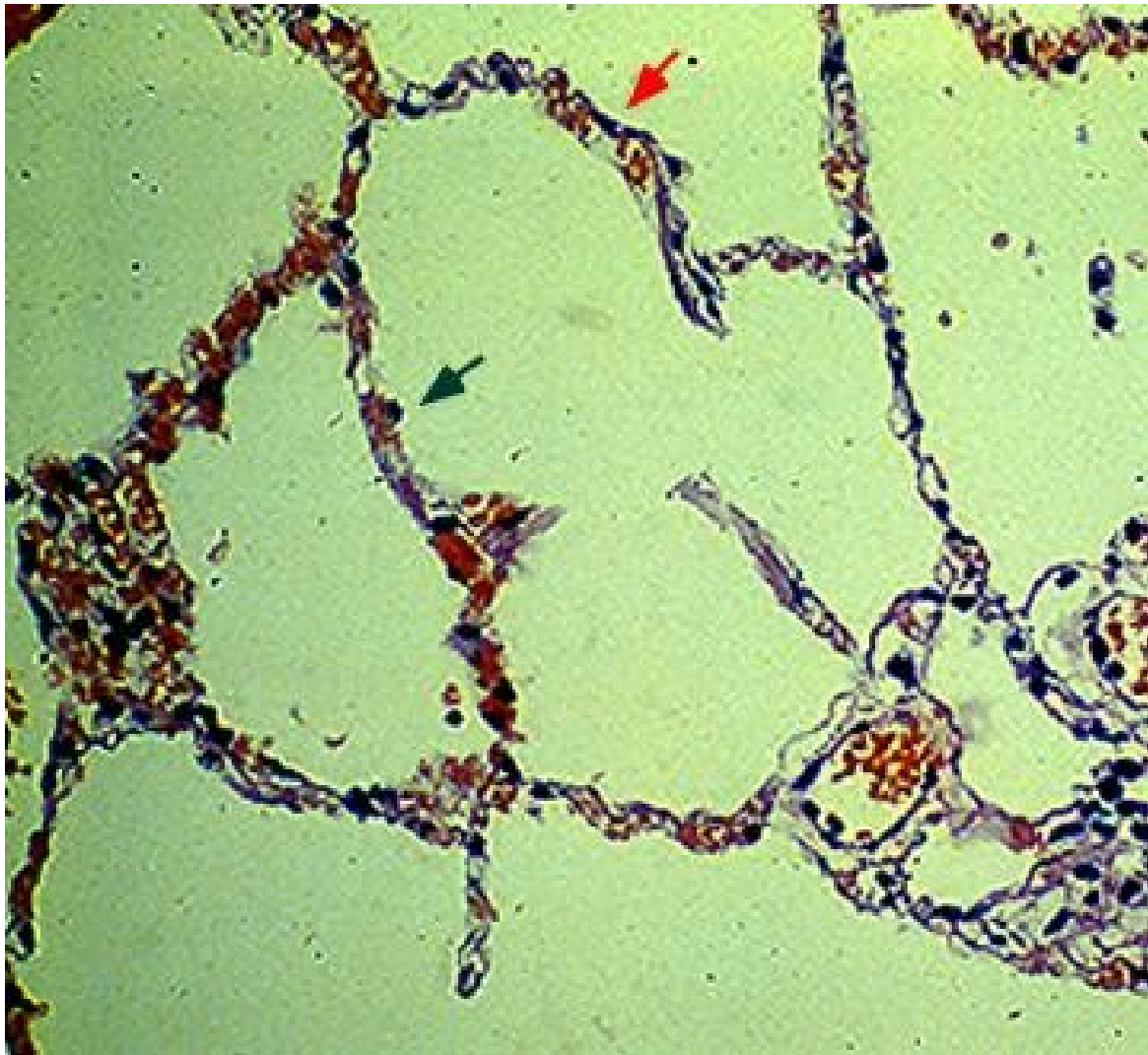
- ***Sekundaren***

- Inflamatorni medijatori od ekstrapulmonalen fokus vo sistemska cirkulacija

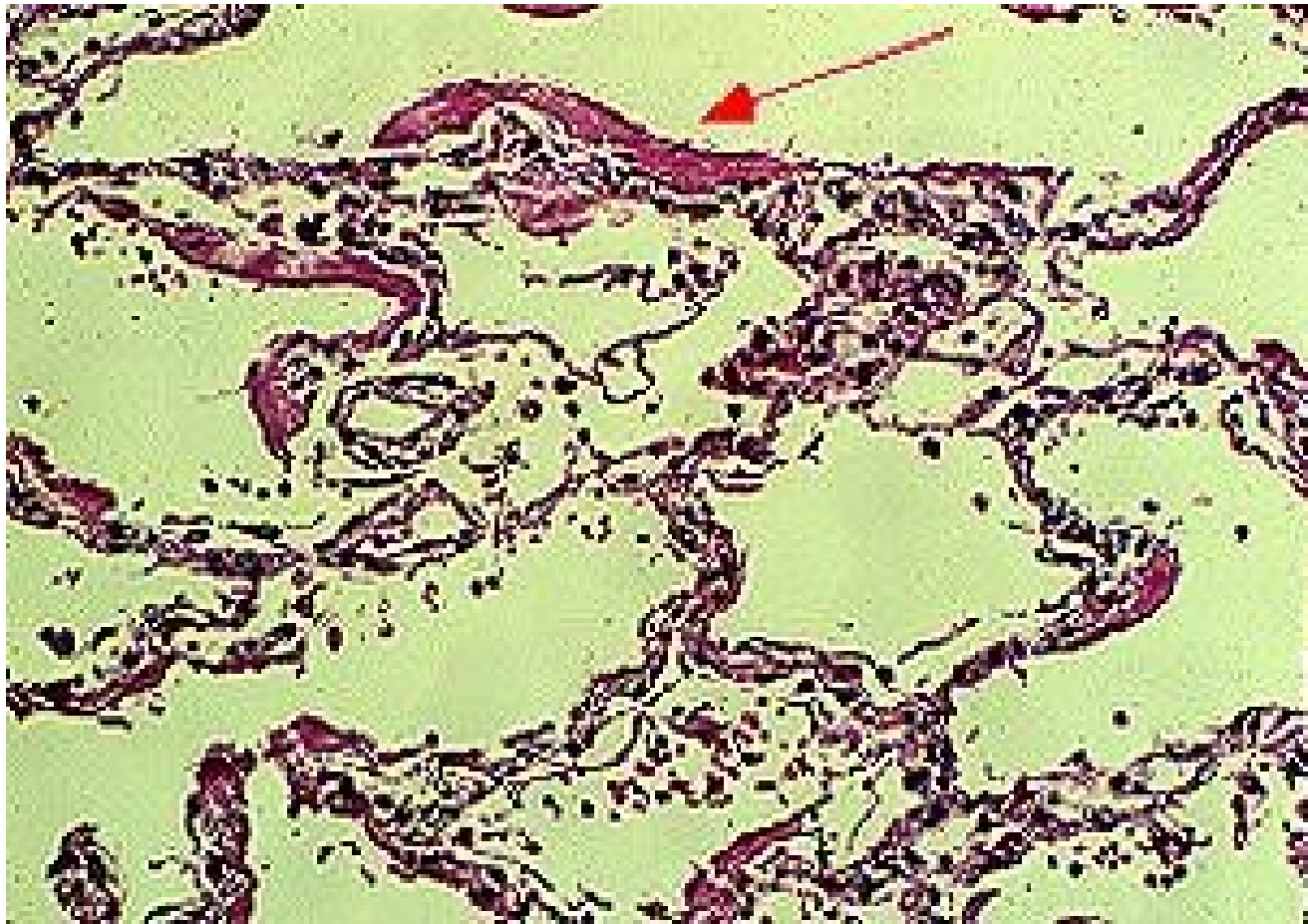
- Zgolemena



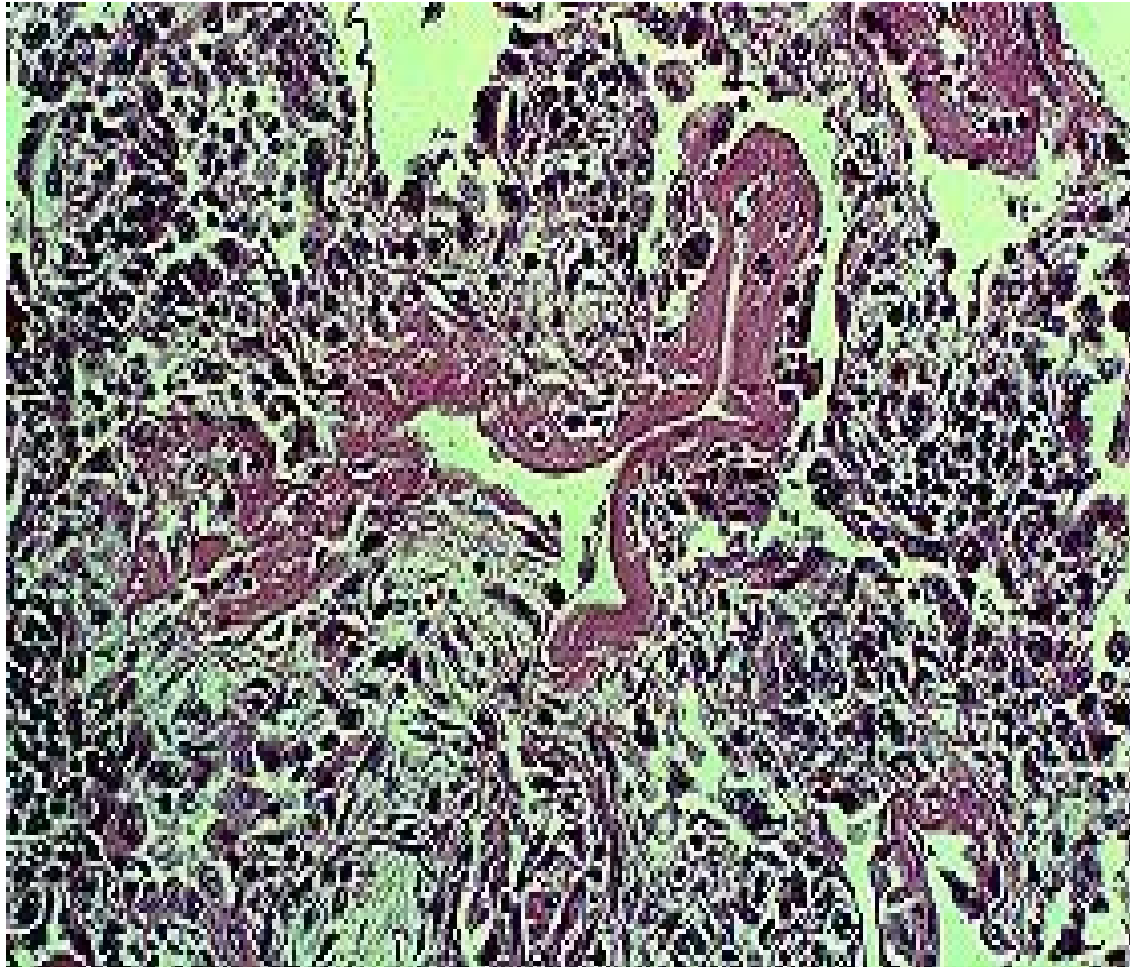




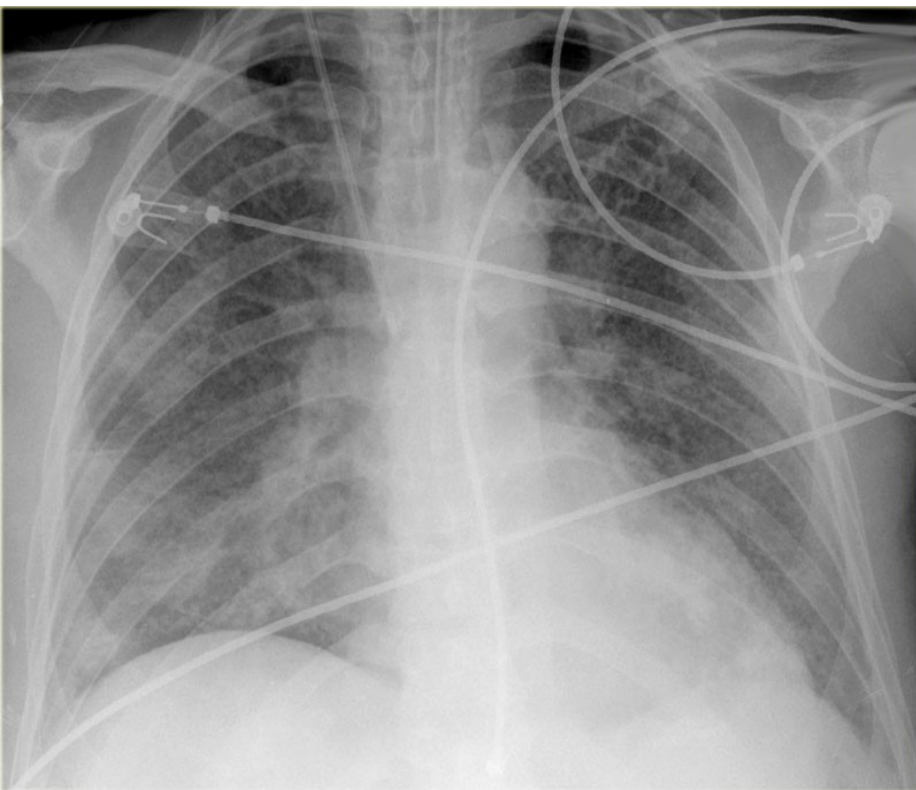
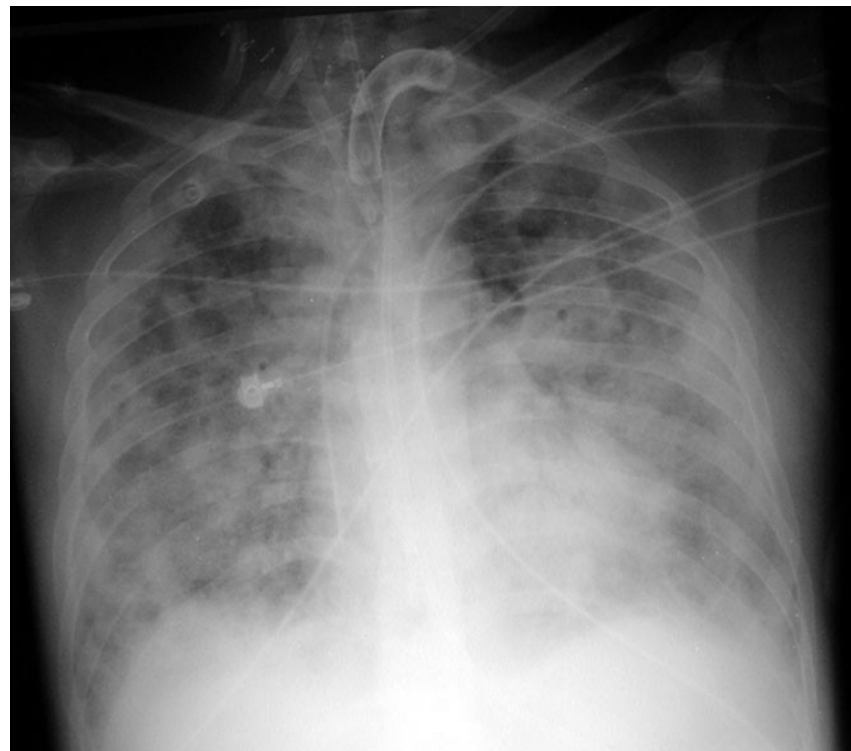
Zdrav bel drob



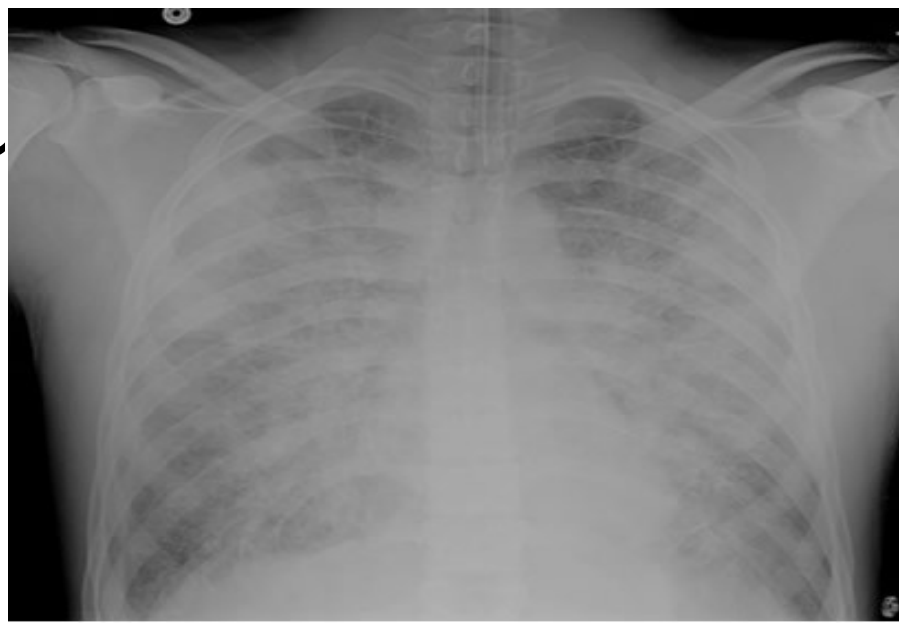
Resorção na ARDS



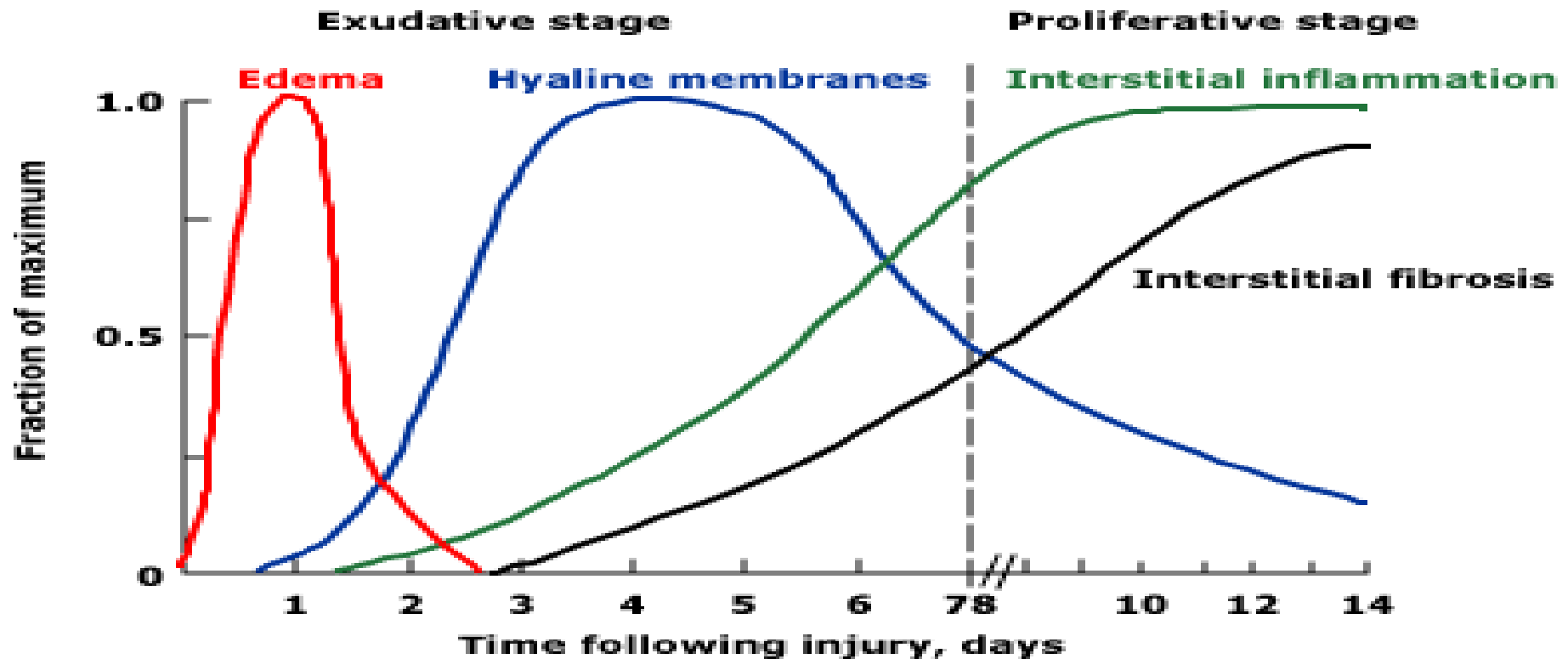
***Docna (proliferativna) faza
na ARDS***



- Bilateralni difuzni oblaksenki
- Normalna srceva големина



ARDS Timeline



Narušena razmena na gasovi

- *Narušen odnos ventilacija/perfuzija*
- *Zgolemen fiziološki mrtov prostor*
- *Zgolemen šant*
- *Namalena eliminacija na jagleroden
dvooksid*

Namalena belodrobna komplijansa

Belodrobna hipertenzija

***Nezavisno od etiologijata na akutnata belodrobna
lezija, kliničke manifestacii se stereotipni:***

Izrazena hipoksemija !!

Tvrdi beli drobovi - namalena komplijansa

Radiografski - difuzni infiltrati

Klini~ki timeline

Klini~ki timeline

Faktori na mortalitet

Etiologija - Pacienti so ARDS asociran so trauma imaat pomala smrtnost od pacienti so netraumatska etiologija na ARDS

Calfee CS et al. Crit Care Med, 2007 Oct;35(10):2243-50

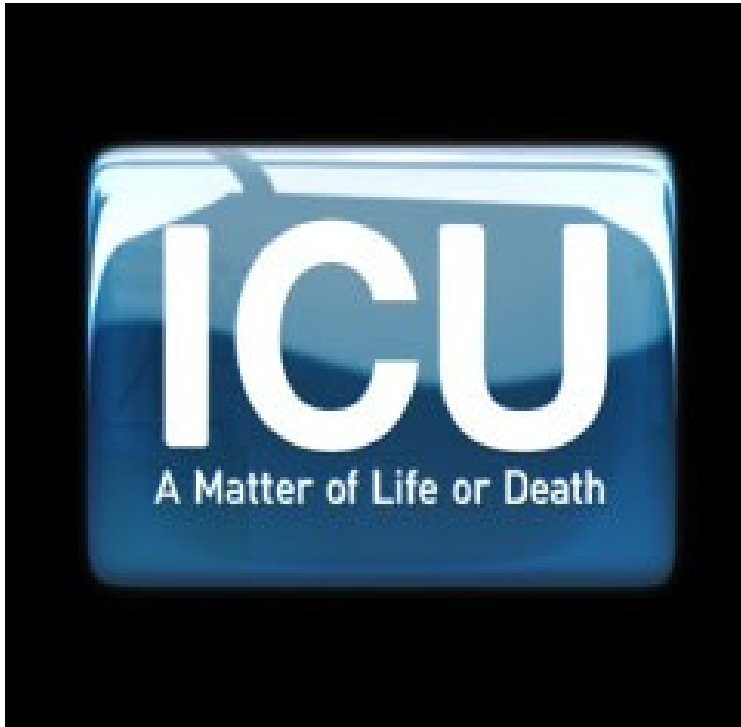
Balans na te~nosti - Pozitiven balans na te~nosti e asociran so povi sok mortalitet

Rosenberg AL et al. J Intensive Care Med. 2009 Jan-Feb;24(1):35-46

APACHE III score - povi sok skor e asociran so povi sok mortalitet

Gong MN et al. Crit Care Med 2005 Jun; 33(6):1191-8

Tretman na ARDS



- Tretman vo ICU:
- Mehani~ka ventilacija
- Balans na te~nosti
- Tretman na etiolo{kata pri~ina
- Prevencija na komplikaciji (barotrauma,

Treatment na ARDS – Try and error

~~NO~~

~~Kortikosteroidi~~

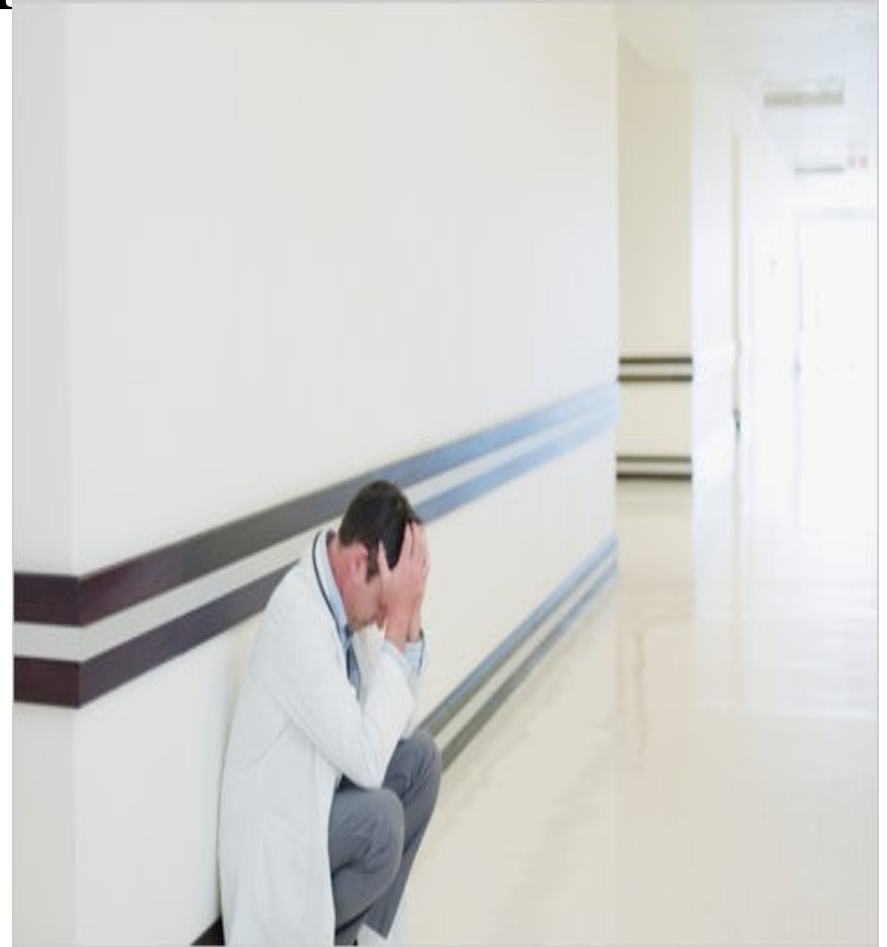
HFJ Ventilation?

Prone position?

PEEP?

Recruitment?

?



Perhaps the most important advance in ARDS research has been the recognition that mechanical ventilation, although necessary to preserve life, can itself aggravate or cause lung damage through a variety of mechanisms collectively referred to as ventilator-induced lung injury (VILI). This improved understanding of ARDS and VILI has been important in designing lung-protective ventilatory strategies aimed at attenuating VILI and improving outcomes

Tretman na ARDS

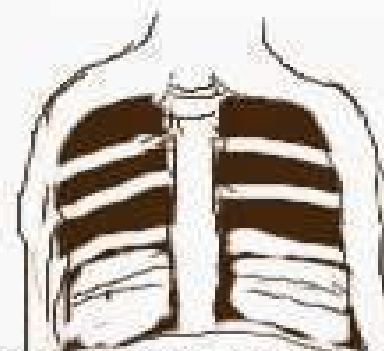
- Mehani~ka ventilacija - protektivna strategija so niski di{ni volumeni i nizok inspiratoren pritisok
- PEEP – 5-10 sm H₂O (poefikasen kaj ekstrapulmonalen ARDS i vo ranata faza)

Progress in intensive care (ICU) treatment of acute respiratory distress syndrome (ARDS) over the last 20 years includes the introduction of extracorporeal membrane oxygenation (ECMO) for CO₂ removal and the widespread use of evidence-based lung-protective ventilatory strategies. Little is known, however, about whether these changes have resulted in improvements in short-term and long-term outcome of acute respiratory distress syndrome (ARDS) within the two decades after introduction.

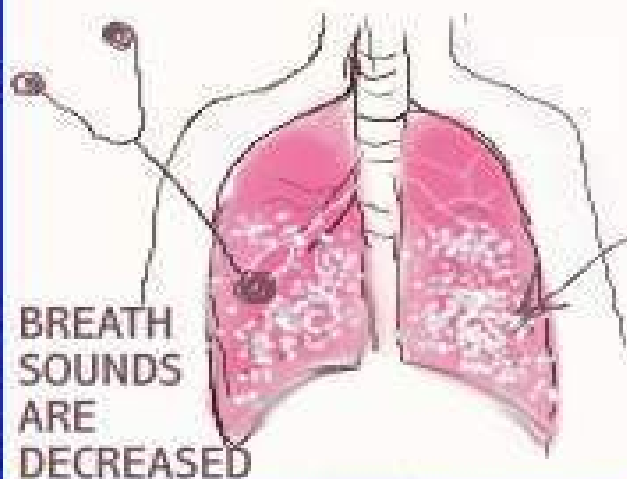
Briegel I et al. Anaesthetist. 2013 Apr 6. [Epub ahead of print]



ABG (ARTERIAL BLOOD GAS) ANALYSIS IS USUALLY DONE TO HELP IN THE DIAGNOSIS OF ARDS.



CHEST X-RAY IS A VALUABLE TOOL IN DIAGNOSING ARDS.



IN ARDS THE LUNG TISSUE BECOMES STIFF AND OXYGENATION IS DIFFICULT. THE AIR SACS (ALVEOLI) FILL WITH FLUID AND WHITE PATCHES ARE SEEN ON X-RAY. THE TERM "WHITE OUT" IS SOMETIMES USED TO DESCRIBE THE DAMAGED LUNGS. MECHANICAL VENTILATION BECOMES NECESSARY TO ASSIST THE WORKLOAD OF BREATHING. BREATH SOUNDS ARE DECREASED AS VENTILATION OF LUNG TISSUE BECOMES DIFFICULT.