

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

SURFACTANT

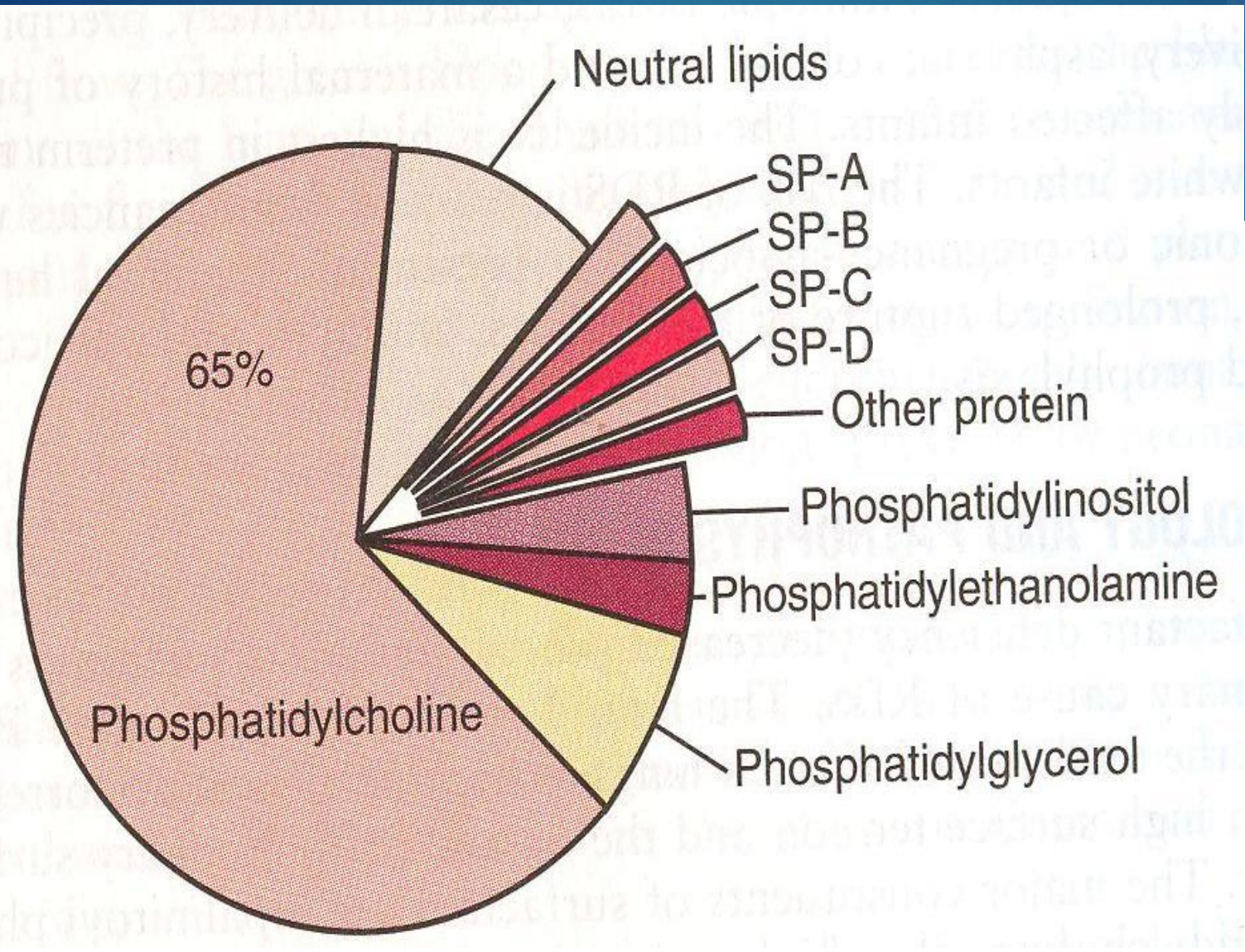
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History:

- ▶ The first use of surfactant was begin in 1960
&led to significant improvement in neonatal
outcome in preterm infants with R.D.S

What is pulmonary surfactant:

- ▶ Reduce surface tension in alveoli
- ▶ Composed from neutral lipid(10%)/protein(10%)
& phospholipid(70-80%)
- ▶ The main composition: phosphatidylcholine(DPPC)



Surfactant

- ✚ Surfactant is identifiable in fetal lung as early as 16 weeks, though its proper secretion begins after 24 weeks gestation and is synthesized most abundantly after the 35th week of gestation.
- ✚ Pulmonary Surfactants are phospholipids synthesized in the type II cells lining the alveoli surfactant.
 - Phospholipid produced by alveolar type II cells.
 - Lowers surface tension.
 - As alveoli radius decreases, surfactant's ability to lower surface tension increases.
 - The half-life of surfactant is 30 hours

WHAT IS SURFACTANT:

Types of surfactant:

- ▶ Animal derived (namely, neutral): poractant alpha (curosurf) - beractant (survanta) &....
- ▶ Synthetic composed solely D.P.PC & does not have protein B&C (first surfactant in 1960)
- ▶ New synthetic (lucinactant) have synthetic phospholipid & peptides

Which infants should receive surfactant:

- ▶ 1-preterm infants with R.D.S
- ▶ 2-pulmonary hemorrhage
- ▶ 3-meconium Aspiration
- ▶ Congenital pneumonia

When we use surfactant for R.D.S:

- ▶ Prophylactic method
- ▶ Early Rescue (<2hr)
- ▶ Late Rescue (>2hr to 48hr)
- ▶ Late surfactant therapy for chronically ventilated preterm infants (>7day)-study_

Methods of administration:

- ▶ Intratracheal (standard ,INSURE)
- ▶ Without intubation:
 - ▶ by Laryngeal mask
- ▶ MIST (minimally invasive surfactant treatment)
- ▶ LISA (less invasive surfactant administration)

Methods;

- ▶ NIST(Non-invasive surfactant therapy)-aerosolized administration
- ▶ Pharyngeal administration –immediately after birth

Chest position during instillation

changing chest position after instillation did not result in any redistribution of the surfactant.

Keeping the chest in the horizontal position

When to treat with surfactant in acute RDS:

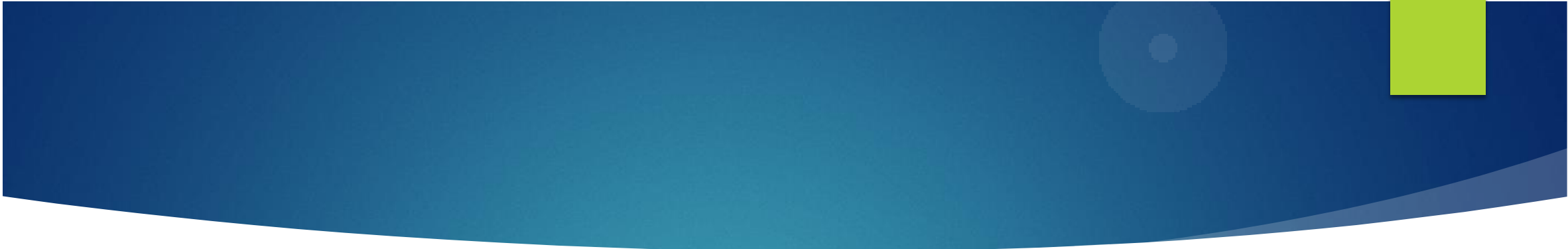
- ▶ In preterm infants(24-37 wk) who was intubated in delivery room –after stabilization-
- ▶ In preterm infants who was under CPAP & need to increase pressure up to 8 cmh₂o & FIO₂ above 30-40% for O₂ saturation >90%

When use redosing:

- ▶ After 6-12 hr the infant was intubated with MAP > 7 cmH₂O & FIO₂ > 40%
- ▶ In CPAP infant with PEEP 6-7 cmH₂O need to FIO₂ > 40%
- ▶ After first dose every 24hr with neonatologist order

Adverse effects in surfactant therapy:

- ▶ Transient hypoxia & bradycardia
- ▶ Reflux of surfactant into pharynx
- ▶ Gagging & mucous plugging of ETT
- ▶ Pulmonary hemorrhage-in natural 5-6% & in synthetics 1-3%

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- ▶ Immunologic reactions?
 - ▶ Encephalitis from animal derived surfactant?