Meconium Aspiration Syndrome

- Meconium aspiration syndrome (MAS): Respiratory distress after aspiration of meconium-stained amniotic fluid
- Causes ↓ lung compliance & hypoxia ± pulmonary hypertension & air leak syndrome
- Pathology
  - Aspirated meconium causes injury by several mechanisms
  - Mechanical obstruction of small airways → air-trapping, air-leak complications
  - Chemical pneumonitis of airways & parenchyma
  - Surfactant inactivation → diffuse atelectasis
  - Pulmonary vasoconstriction → persistent pulmonary hypertension

Clinical Issues

- Disease of term & postterm neonates
- Meconium staining of amniotic fluid occurs in infants with in utero or intrapartum hypoxia or stress
- 4-12% with meconium staining develop MAS
- Meconium-stained & distressed infant suctioned immediately ± intubation
- ECMO for severe pulmonary hypertension
- Mortality 7-12%; chronic lung disease 2.5%

Notes

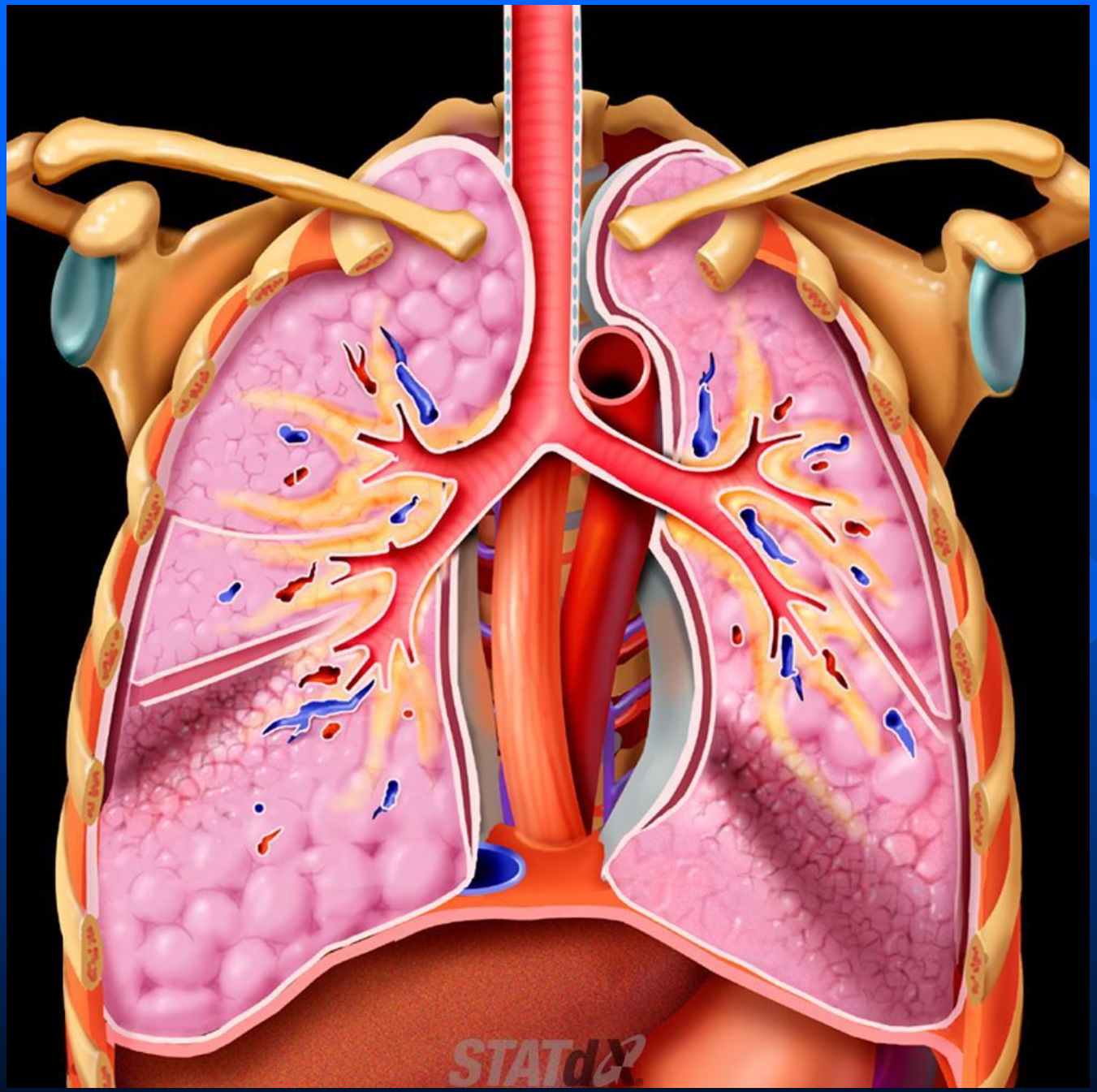
- If humeral head ossification centers are present then the baby is term
- If they are not, all bets are off.
- **Image Interpretation Pearls**
  - Relevant history essential for accurate interpretation of all neonatal chest disease, particularly MAS
    - » Term or postterm infant
    - » Meconium staining of amniotic fluid at delivery

Stages of pregnancy

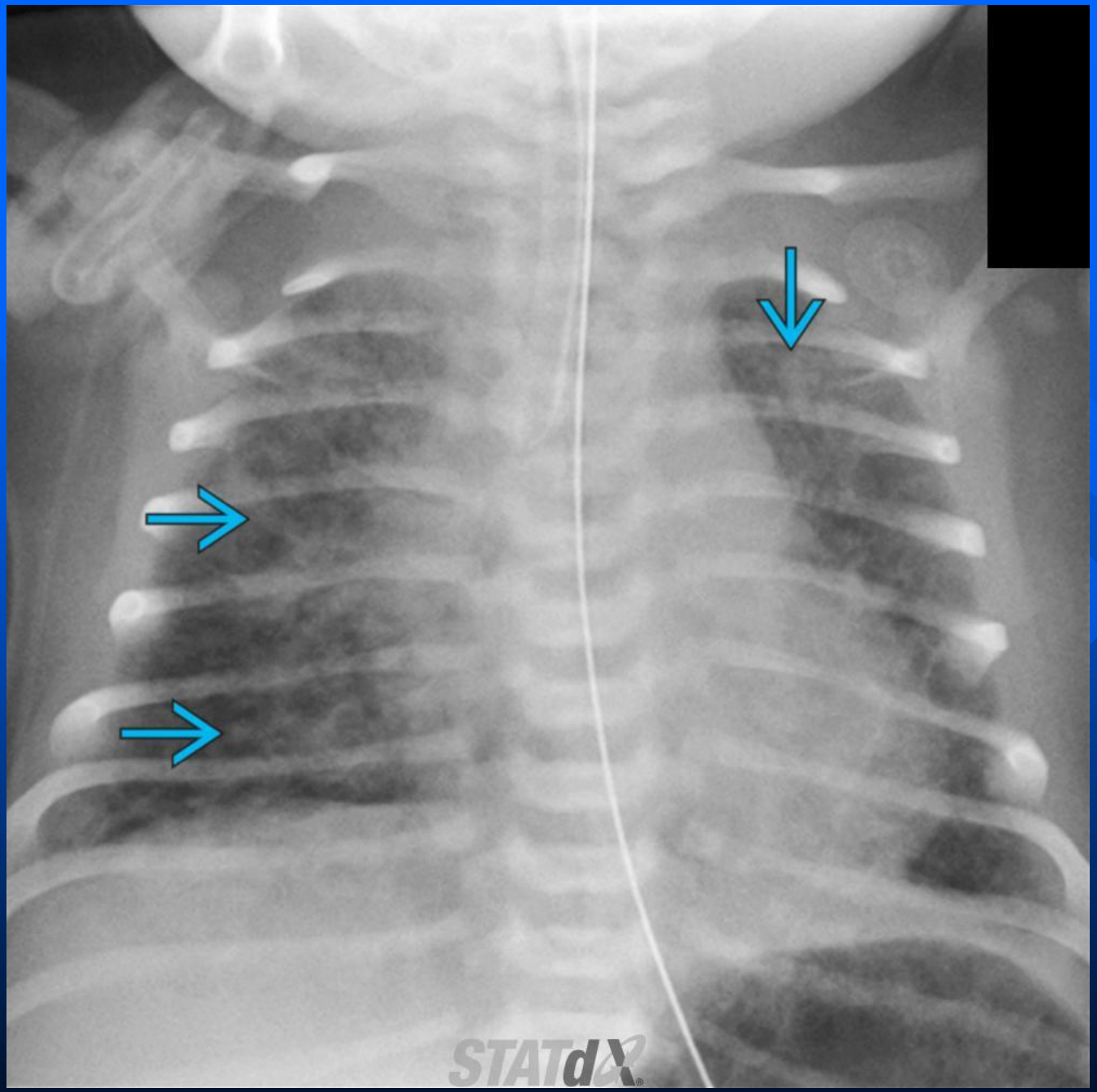
stage	starts	ends
Preterm[44]	-	at 37 weeks
Early term[45]	37 weeks	39 weeks
Full term[45]	39 weeks	41 weeks
Late term[45]	41 weeks	42 weeks
Postterm[45]	42 weeks	-

X-ray

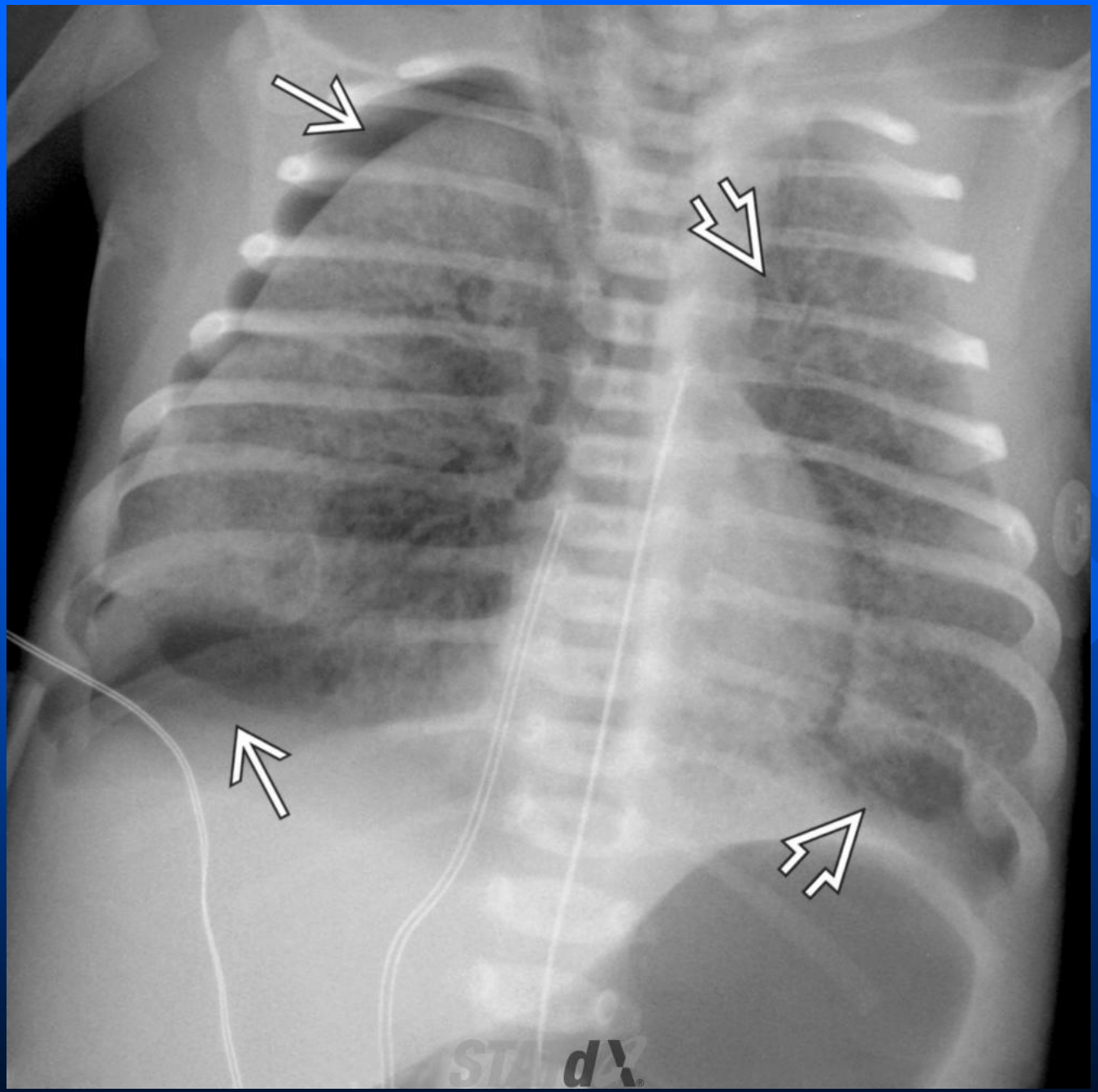
- Coarse, thick, "rope-like" linear & nodular perihilar opacities
- Patchy, hazy opacities of atelectasis & pneumonitis
- Generalized hyperinflation
- ± pleural effusion
- ± air leak: Pneumomediastinum, pneumothorax, pulmonary interstitial emphysema



Graphic demonstrates asymmetric areas of hyperinflation & atelectasis as well as rope-like perihilar densities of aspirated meconium & inflamed airways.



AP chest radiograph in a 41-week gestation newborn with meconium staining of amniotic fluid & respiratory distress shows coarse, reticular, rope-like perihilar opacities (cyan solid arrow), typical of meconium aspiration. There are patchy asymmetric regions of increased hazy lung opacity bilaterally.



AP radiograph of the chest in a full-term infant with meconium aspiration demonstrates right (white solid arrow) greater than left (white open arrow) pneumothoraces with bilateral lung hyperinflation & diffuse opacification. Pneumothorax is a common complication in these patients.

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bilateral, irregular coarse infiltrates