Bronchopulmonary Dysplasia (BPD)

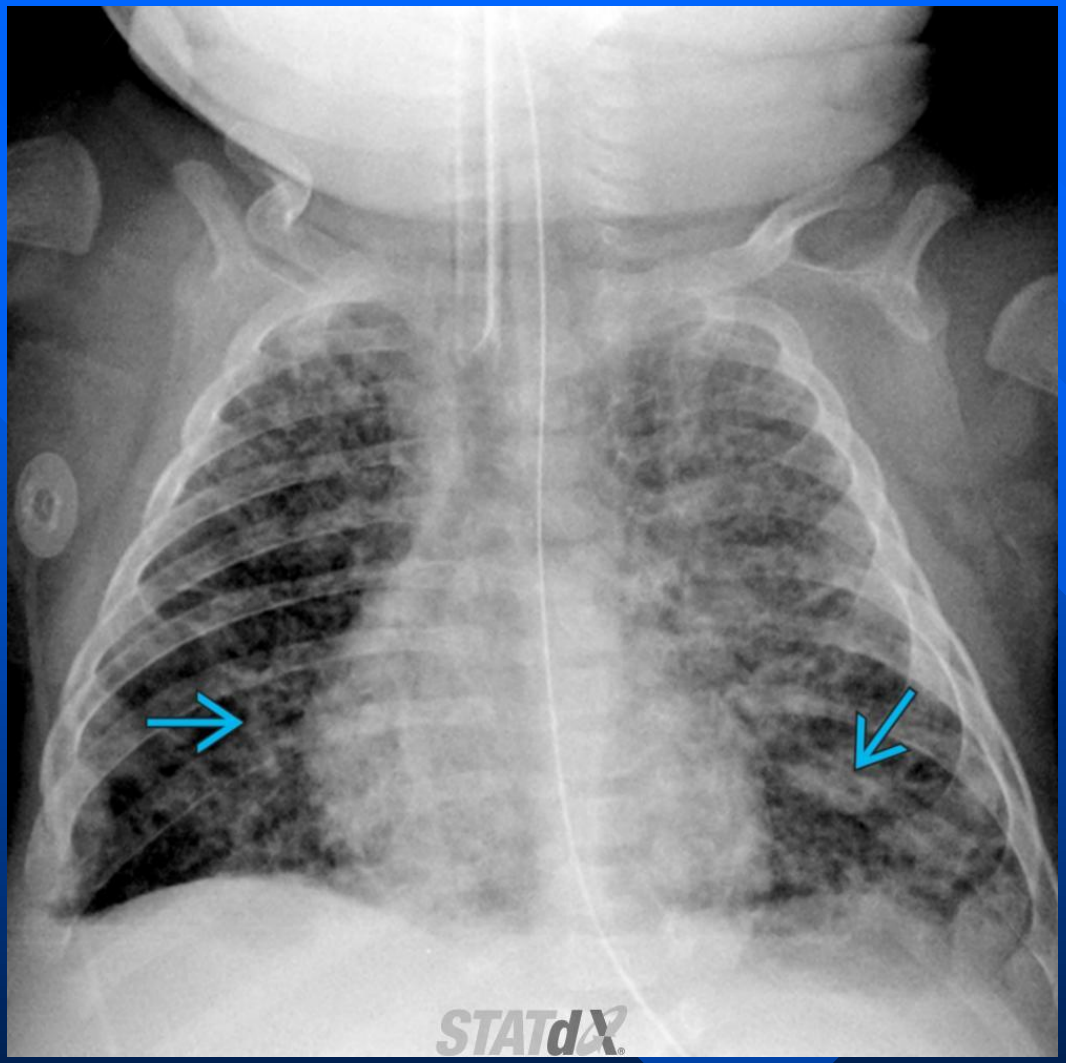
- ***End stage lung disease due primarily to oxygen toxicity from chronic ventilatory support.***
- ***Most commonly seen as a sequelae to hyaline membrane disease, but can also be seen as a sequelae to meconium aspiration, persistent fetal circulation, and congenital heart disease.***

Bronchopulmonary dysplasia

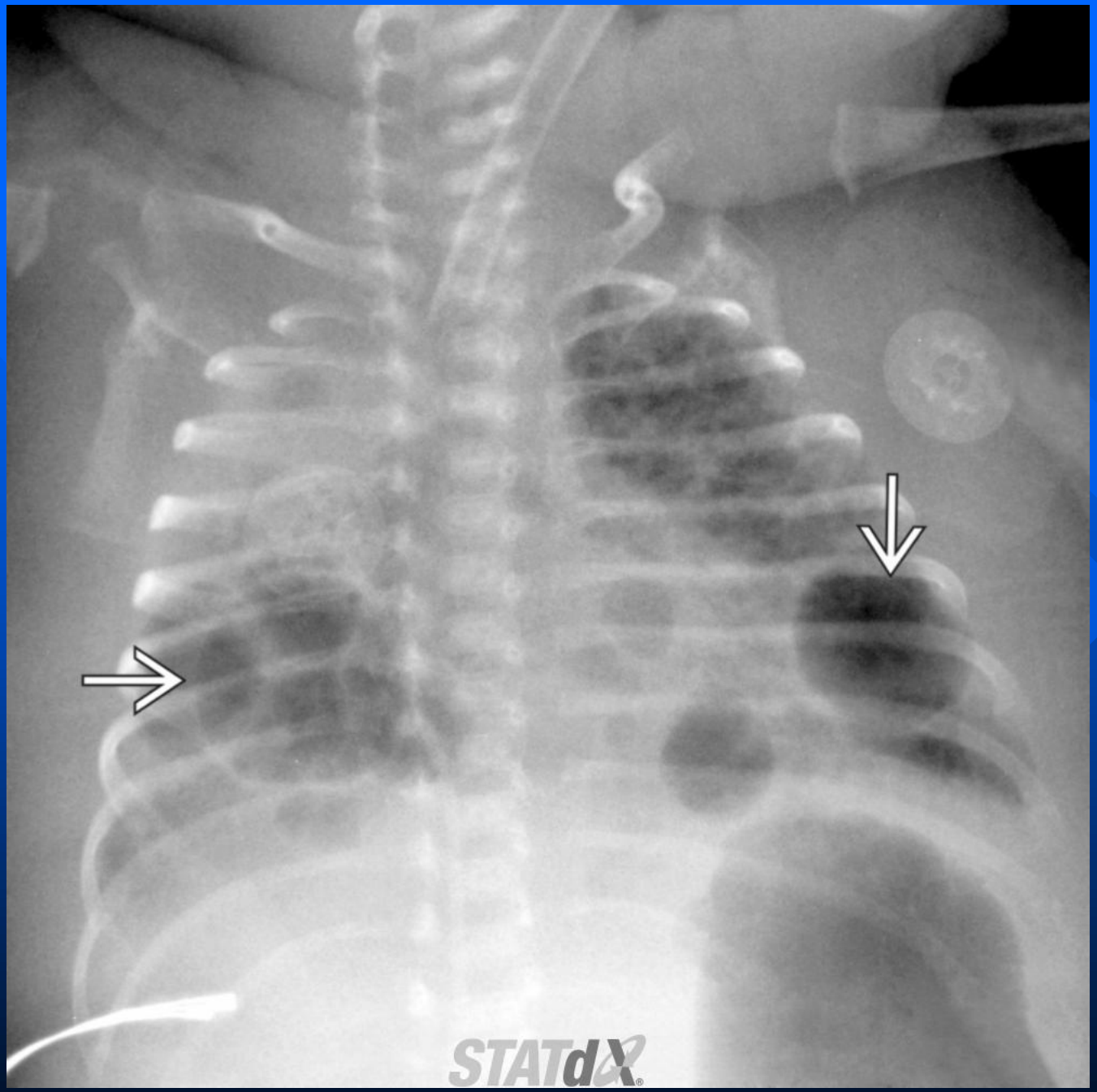
- Chronic lung disease of prematurity
- Current definition
  - Chronic lung disease of premature infants born at < 32 weeks gestation
  - O_2 dependency for at least 28 days
  - Failure of O_2 challenge at 36 weeks postmenstrual age
  - Chest radiograph abnormalities no longer required
- Old bronchopulmonary dysplasia (BPD)
  - Larger, later preterm infants with prolonged mechanical ventilation & O_2 therapy
- New BPD
  - More diffuse but overall milder disease of earlier, smaller preterm infants

Imaging Findings

- ***Over time, the imaging findings progress.***
- **Initially the typical "ground glass" pattern of hyaline membrane disease is seen.**
- **1-2 weeks complete opacification of the lungs ("white out") is seen.**
- **At 2-3 weeks multiple small cystic lucencies of relatively uniform size and distribution are seen giving the lung a bubbly appearance.**
- **Several months of age, lung volume is increased, and the small cystic lucencies have coalesced into larger ones surrounded by fibrotic stranding.**
- **In most survivors, clinical and radiologic signs of BPD clear within 2-3 years.**



AP radiograph in a 4-month-old former 24 weeks gestation premature infant with bronchopulmonary dysplasia (BPD) shows mild bilateral hyperexpansion with generally coarsened lung markings (cyan solid arrow). There are patchy foci of hazy parenchymal opacity intermixed with foci of hyperlucency due to air trapping.



AP radiograph of the chest in a neonate with chronic lung disease shows development of bilateral pneumatoceles (white solid arrow) superimposed on regions of hyperinflation & atelectasis. The background parenchymal markings are coarsened.

BPD

1 week of age reveals a ground glass appearance to the lungs

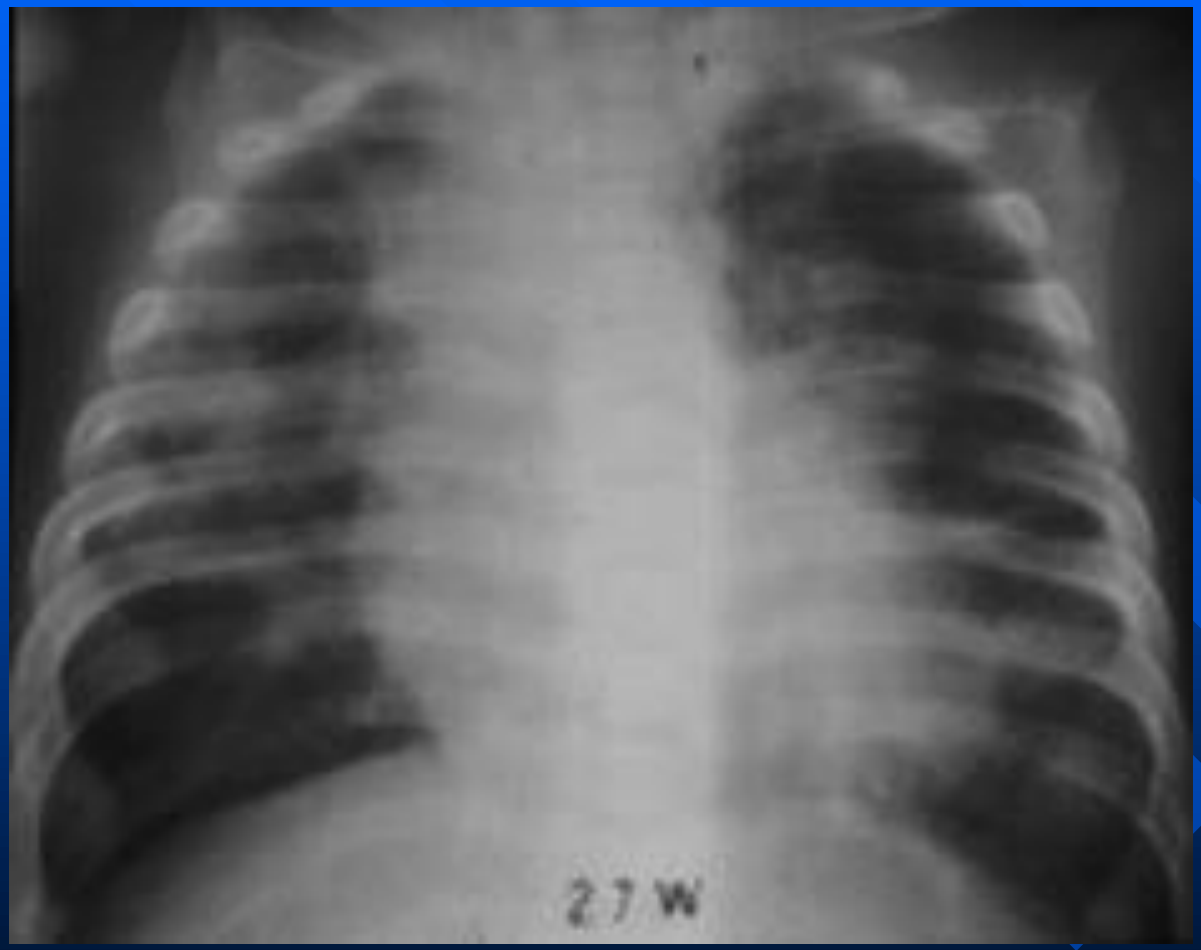
BPD

1 month of age shows the development of small cystic lucencies in the lungs.

BPD

same patient at 2 months of age shows continued development of small cystic lucencies in the lungs.

BPD



Same patient at 7 months of age shows the small cystic lucencies to have coalesced into larger lucencies with interspersed fibrotic stranding. Increased lung volumes are also present