

Oxygen Weaning in the Premature Infant (Outpatient)

ALGORITHM

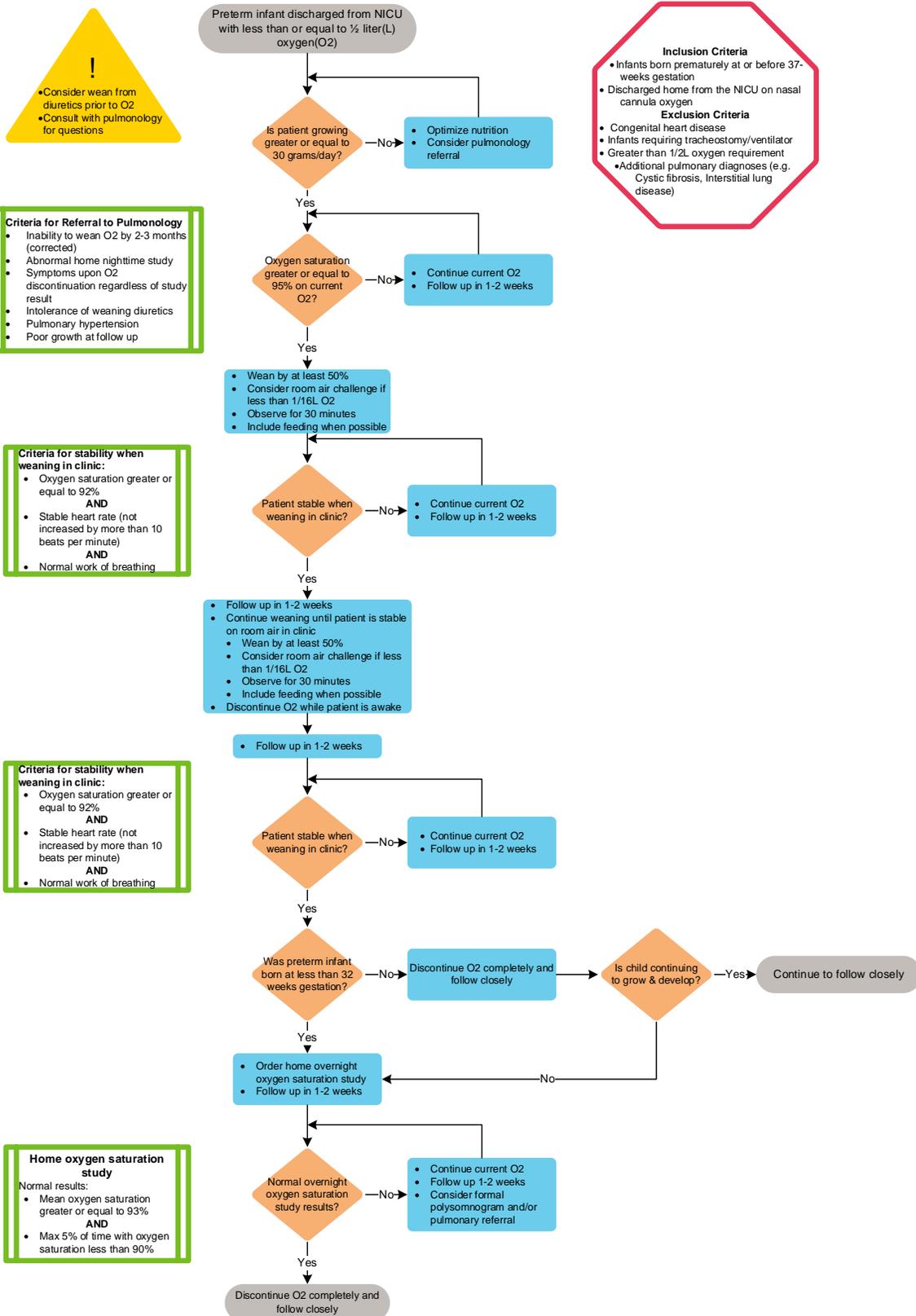


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TARGET POPULATION

Inclusion Criteria

- Infants born prematurely at or before 37-weeks gestation
- Discharged home from the NICU on nasal cannula oxygen

Exclusion Criteria

- Congenital heart disease
- Infants requiring tracheostomy/ventilator
- Greater than 1/2L Oxygen requirement
- Additional pulmonary diagnoses e.g. Cystic Fibrosis, Interstitial lung disease.

BACKGROUND | DEFINITIONS

Modern advances have resulted in increased survival of preterm infants, yet the incidence of bronchopulmonary dysplasia (BPD, the chronic lung disease of prematurity) has not changed. For this reason, premature infants are increasingly discharged from the neonatal intensive care unit (NICU) with home oxygen therapy. Primary care providers are then tasked with determining how best to wean the oxygen in the outpatient setting. These clinicians must also determine which patients need additional testing and should be referred to a pulmonologist.

There are not currently accepted standard guidelines for weaning premature infants from supplemental oxygen in the outpatient setting. In one study, only 8% of pediatric pulmonologists used a standardized protocol for weaning oxygen and there is limited evidence about these practices in primary care. In 2019, an expert panel representing the American Thoracic Society published formal clinical practice guidelines for home oxygen therapy for children. However, the panel confirmed the lack of evidence-based guidelines for weaning/discontinuing home oxygen and agreed unanimously that “a large, prospective trial comparing weaning strategies is needed.” These guidelines included a consensus-based approach to weaning home oxygen which is consistent with this clinical pathway.

INITIAL EVALUATION

- Infant met criteria in the NICU for home oxygen therapy.
- Infant discharged on home oxygen therapy with instructions to follow up at outpatient primary care setting (PCP).

CLINICAL MANAGEMENT

PCP Team Members' Roles and Responsibilities:

Prior to first appointment at PCP, infant possibly identified as premature and/or on home oxygen therapy (ideally NICU discharge summary received and reviewed by PCP)

Team huddle to identify infants eligible for possible initiation of O2 wean Clinical Care Guideline prior to their arrival

Role of MA:

- Obtain on check-in the infant's vital signs, pulse ox, height/weight and head circumference
- Identify the need for possible O2 wean during clinic visit based on discussion with parent at check-in and/or prior team huddle
- Inform RN and PCP of infant status of O2 dependency
- Leave pulse ox on infant when rooming.

Role of RN:

- Continue the initial triage including assessment of O2 tank and assessment of the infant's respiratory status once the infant is roomed
- Monitor for O2 desaturations or signs of respiratory distress
- Communicate clinical status of infant and pulse ox results to PCP
- Coordinate next steps in therapy including faxing letter or order to home healthcare agency for changes in home oxygen therapy prescription or for overnight pulse ox studies.
- Implement the standing order to begin wean prior to PCP coming into exam room (currently pending approval)

Role of PCP:

- Keep an updated problem list to include premature infant X-weeks gestation (P07.21-P07.39), BPD (ICD10 code: P27.1), current level of O2 (ICD10 code: Z99.81) and whether patient is on diuretics (ICD10 code: Z79.899)
- Complete a full clinical assessment including a history and PE
- Refer to [algorithm](#) for O2 weaning
- Follow criteria for Referral to Pulmonology as this guideline does not address how to wean other respiratory medications including diuretics.

History

- Document any recent difficulty breathing as well as any episodes off of oxygen and how the infant did. In addition, document any concerns about feeding or sleeping as infants who are hypoxic or still having respiratory distress may have trouble feeding and sleeping.

Physical Exam

- Evaluate the infant's weight gain with a goal of at least 30g/day of weight gain to allow for appropriate catch up growth in a premature infant.
- Document respiratory rate and any increased work of breathing noted on exam (abdominal breathing, retractions, flaring).

Criteria for Referral to Pulmonology

- Discharged on $\frac{1}{2}$ LNC or Greater
- Respiratory symptoms/concerns regardless of oxygen status
- Inability to wean O₂ by 2-3 months (corrected)
- Abnormal home nighttime study (or symptoms upon O₂ discontinuation regardless of study result)
- Intolerance of weaning diuretics
- Pulmonary hypertension
- Poor growth at follow up

LABORATORY STUDIES | IMAGING

- All premature infants on oxygen should have routine pulse oximetry at every visit.
- The only additional laboratory study to order is an overnight pulse oximetry study if the infant meets criteria.

THERAPEUTICS

Oxygen: Titrate oxygen to goal of oxygen saturation greater than 95%

PARENT | CAREGIVER EDUCATION

- Expected clinical course
- Proper techniques for suctioning and airway maintenance
- Signs of worsening clinical status and when to call their PCP
- Proper hand hygiene
- Smoking Cessation Counseling
 - Quit line: 1 (800) 630-QUIT
 - Quitnet: www.co.quitnet.org
 - Caregiver Smoking Cessation Clinic at the Child Health Clinic
 - DIMENSIONS program at University of Colorado Hospital

Links to Patient-Caregiver Education

- [Home Oxygen Therapy-In Care of Kids-English](#)
- [Home Oxygen Therapy-In Care of Kids-Spanish](#)
- [Smoking cessation handouts-In Care of Kids-English](#)
- [Smoking cessation handouts-In Care of Kids-Spanish](#)

REFERENCES

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REVIEW | REVISION SCHEDULE

Scheduled for full review on June 16, 2024

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