Air Challenge Test for NICUS (Version 4: May 26 2014)

Trial in Air for 30 minutes  
Click here for the parent information sheet

The Air Challenge Test should be performed between 36+0 and 36+6 weeks corrected age.

PURPOSE:
To identify neonates who can maintain Oxygen saturation ≥90% in room air for 30 minutes. To reduce variability in diagnosis of chronic lung disease due to variation in NICU practice.

Note:
The Air Challenge should only be performed with the agreement of the Neonatologist. Do not perform the Air Challenge on any neonate considered to be clinically unstable. Cease the Air Challenge if the neonate meets failure criteria or becomes clinically unstable.

PASS/FAIL CRITERIA

Pass:
Maintains ≥90% Oxygen saturation in air over a 30 minute trial period
- May have brief decrease in oxygen saturation <80% for <15 seconds
- May have oxygen saturation between 80-89% for <5 consecutive minutes
- Cease trial if significant apnoea or bradycardia occurs while saturation is <90%

Fail:
1. O2 Sat < 80% for ≥15 seconds OR
2. O2 Sat 80 – 89% for ≥5 consecutive minutes OR
3. Apnoea or Bradycardia associated with O2 Sat < 90%

Repeat Trial
If neonate fails trial on first attempt, a second trial may be performed if clinically indicated. (eg if adverse circumstances were thought to affect the first trial) The timing of a second trial should be discussed with the Neonatologist.

TRIAL PROCEDURE

ELIGIBLE NEONATES:
Neonates who remain in supplemental oxygen or pressure support at 36 weeks corrected age and fulfil one of the following criteria:
- Supplemental oxygen without pressure support (nasal cannula (≤2L/min) or incubator)
  - FiO2 ≤30% and oxygen saturation >90%
  - FiO2 >30% and oxygen saturation >96%
- CPAP or Hi Flow (>2L/min) with FiO2 ≤25%
- Low flow nasal cannula using unblended 100% oxygen with flow ≤0.1L/min

EXCLUDE Neonates who are
- Intubated/NIPPV
- CPAP or High Flow (>2L/min) >25% FiO2
- Considered too unstable for Air Challenge by Neonatologist
Preparation
- Confirm with Neonatologist that neonate is sufficiently stable for air challenge.
- Identify clinician available to perform test
  (Note: requires close observation throughout Air Challenge, equivalent to 1:1 nursing)
- Perform between 36+0 and 36+6 weeks corrected age
- Ensure that infant is stable at the time of the challenge
- Nurse infant supine
- Monitor using oxygen saturation and cardio-respiratory monitoring
- Commence study about 30 minutes after a feed
- Set O2 saturation lower alarm = 90

Weaning Phase (approximately 20 minutes):
- Wean oxygen slowly to air using NICHD weaning procedure¹
  - for incubator/head box:
    - wean oxygen to air slowly over 10-20 minutes
  - for nasal cannula flow or CPAP:
    - wean oxygen to air slowly over 10-20 minutes, then wean flow/CPAP
- Observe for Failure Criteria
  - O2 Sat < 80% for ≥15 seconds OR
  - O2 Sat 80 – 89% for ≥5 consecutive minutes OR
  - Apnoea or Bradycardia associated with O2 Sat < 90%
  - Cease weaning if neonate reaches Failure Criteria at any time
    (or at clinician discretion if neonate becomes unstable)

Air Challenge phase (30 minutes)
- If neonate tolerates weaning process to room air, remove all respiratory support
  (including cannula from nose)
- Maximum duration of challenge is 30 minutes
- Observe for Failure Criteria
  - O2 Sat < 80% for ≥15 seconds OR
  - O2 Sat 80 – 89% for ≥5 consecutive minutes OR
  - Apnoea or Bradycardia associated with O2 Sat < 90%
  - Cease Air Challenge if neonate reaches Failure Criteria at any time
    (or at clinician discretion if neonate becomes unstable)

Documentation
- Document in Medical Records and NICUS Air Challenge Sheet (if available):
  - Name of Tester
  - Date/Time of Air Challenge Test
  - Result of Air Challenge Test: Pass or Fail
  - If failed – document failure criteria observed
  - Any adverse events noted during procedure

Reference: