**Diagnostic criteria for common neonatal conditions for use in low-resource settings**

**Respiratory disorders**

**Background**

The reliable diagnosis of common neonatal conditions is critical for identifying disease burdens and providing appropriate care. Diagnostic criteria used internationally may need to adapted for use in low-resource settings where investigations and other resources are often limited.

Respiratory distress is common in preterm / low birthweight (LBW) infants and caused by several conditions including surfactant deficiency, transient tachypnoea of the newborn (TTN), meconium aspiration syndrome and pneumonia (congenital and acquired). Infants may have more than one episode during their admission.

**Completing these record sheets**

The NeoNuNet project aims to evaluate the frequency of common neonatal conditions and how they are diagnosed in practice. Diagnoses are made by clinicians according to their usual clinical practice. This record sheet documents the criteria that the clinician has used to make a diagnosis. Not all criteria will be relevant (e.g. equipment or investigation not available) and some information may be missing. All diagnoses are reviewed by senior clinical staff and any changes/corrections made.

**Working Group members:**

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**Methods**

The working group members identified guidelines for the diagnosis of common neonatal conditions (see appendix). The guideline(s) were reviewed by nine senior NeoNuNet clinicians during a workshop in Ibadan, Nigeria and a draft of a diagnostic record sheet (draft 1) for use in the NeoNuNet project was drawn-up to document the diagnostic features / criteria used by clinicians to diagnose common neonatal conditions.

**This information will complement the routine data collected in the study database that will contain the antepartum, intrapartum and immediate postpartum events.**

The diagnostic record sheet will be pilot-tested in network neonatal units and a final record sheet developed (draft 2). These will be used in the data collection phase of the NeoNuNet project and the information collated to describe how diagnoses are made and to estimate the frequency of common neonatal conditions.

**References**

1.Gallacher DJ, Hart K, Kotecha S: Common respiratory conditions of the newborn. *Breathe (Sheff)* 2016, 12(1):30-42.

2.WHO: A pocket book for hospital care of children, Second edn. Geneva: WHO; 2013.

**Record sheet of criteria used by clinicians to diagnose Respiratory Disorders**

Complete this form for all infants with respiratory distress: Silverman Anderson Score ≥1 (see Appendix)

|  |  |  |
| --- | --- | --- |
|  | **Unit code** | **Patient ID** |
| Infant ID: | **XXX** | **X** | **X** | **X** | **X** |
|  |
|  |  | Infant’s DOB: | **D** | **D** | **/** | **M** | **M** | **/** | **Y** | **Y** |
|  |
| Date of onset of symptoms:\* | **D** | **D** | **/** | **M** | **M** | **/** | **Y** | **Y** |

\*A new episode occurs if the infant has been symptom free (Silverman Anderson Score = 0) for **48 hours or more** after any previous episode. P**lease complete** **all boxes** below: enter **Y** (present), **N** (absent) or **ND** (not done/not known)**.**

**Clinical diagnosis**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Respiratory Distress Syndrome: |  | Meconium Aspiration Syndrome: |  | Pneumonia: |  |
|  |  |  |  |  |  |
| Transient Tachypnoea of the Newborn |  | Other cause:  |  |  |  |

|  |
| --- |
| If other cause: please give details: |

|  |
| --- |
| **Maternal / Pregnancy factors** |
|  | Criteria 1: Infant of diabetic mother |
|  | Criteria 2: Prolonged rupture of membranes (>18 hours) |
|  | Criteria 3: Other maternal risk factor(s) for neonatal sepsis |
| **Intrapartum / post partum factors** |
|  | Criteria 4: Chorioamnionitis |
|  | Criteria 5: Meconium stained amniotic fluid / umbilical stump / nails |
|  | Criteria 6: Required resuscitation at birth |

|  |
| --- |
| **Infant factors** |
|  | Criteria 1: Preterm (gestation <37 completed weeks) |
|  | Criteria 2: 36 weeks gestation or later / post term |
|  | Criteria 3: Progressive respiratory distress from birth |
|  | Criteria 4: Resp distress starting within 6hrs of life (Silverman-Anderson Score ≥4) |
|  | Criteria 5: Respiratory distress starting within 72 hours of life |
|  | Criteria 6: Other features of neonatal sepsis |
|  | Criteria 7: Barrel chest (increased AP diameter) |
|  | Criteria 8: Abnormal CXR findings - please circle all that are present:* Lung opacities/ infiltrates
* Areas of lung collapse
* Ground glass opacity with air bronchogram
* Hyperinflation
 |
|  | Criteria 9: Abnormal laboratory findings- please circle all that are present:* Markers of infection: e.g. FBC, ESR, CRP, Procalcitonin
* Blood culture positive
 |

*Oxygen use* **Please complete** **all boxes**: enter **Y** (present), **N** (absent) or **ND** (not done/not known):

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| CPAP: |  | nasal prongs: |  | high flow: |  | IPPV: |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Age oxygen discontinued (days): |  |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Outome**  Outcome date: | **D** | **D** | **/** | **M** | **M** | **/** | **Y** | **Y** |

|  |
| --- |
| ***Outcome for this episode* (**tick one only): |
| Resolved: |  | Persisting morbidity: |  | Died: |  |

|  |
| --- |
| If complications or persisting morbidity (e.g. air leak syndrome; persistent pulmonary hypertension), give details: |
| Please add any further information relevant to this event |
|  |  |
| Initials of health professional completing form: |  |

**Appendix: Silverman Anderson Score**

From Silverman, W. and Anderson, D.: Pediatrics 17:1, 1956. Copyright American Academy of Pediatrics.



Score = 0

Score = 1

Score = 2

***Upper chest:*** on inspiration movement of upper chest is synchronized with the abdomen (score 0), has some lag as the abdomen rises (score 1) or, in the most extreme cases, a seesaw-like movement of the chest and abdomen is observed (score 2).

***Lower chest:*** retraction of the soft tissues between the ribs is rated as none (score 0), just visible (score 1) or marked (score 2)

***Xiphoid retraction:*** rated as none (score 0), just visible (score 1) or marked (score 2)

***Nasal flaring:*** rated as none (score 0), just visible (score 1) or marked (score 2)

***Expiratory grunting:*** rated as none (score 0),audible with a stethoscope (score 1) or audible without using a stethoscope (score 2)

Summary score:

* Score 10 = Severe respiratory distress
* Score ≥ 7 = Impending respiratory failure
* Score 0 = No respiratory distress