

EVIDENCE TABLE

for Clinical Indicators of Severity in Lower Respiratory Tract Infection

Clinical question: Do individual clinical indicators correlate with severity of acute lower respiratory infection, or bronchiolitis?

| Study authors and year | Study Design | Participants | Exposure/ Comparison | Outcomes | Results | | | | | Quality Scores |
|------------------------|-----------------------|---|--|--|---------|-----|----|----|-----|--|
| | | | | | EER | CER | RR | RD | NNT | |
| Brooks, 1999 | Cohort Retrospective | 542 admitted to ward, 17 to PICU matched with 2 kids not admitted to PICU RSV pos | Intensive care admission Which predicts severe course | RR 63 vs 50 RR > 80/min sens 30%, spec 97% O2 88% vs 93% O2<85% sens 30%, spec 97% Wheezing severity & CXR not helpful | | | | | | Φ good study small numbers for PICU |
| El Radhi 1999 | X section Prospective | Infants Hosp UK Severity score | Parameters that predicted severity + CXR abnormality | 90 infants 38 needed O2 28 fever 26 xray abnormal fever best predictor of both severe and xray | | | | | | Φ cannot find RR data Doesn't list score |
| Gadomski 1993 | X section Prospective | Physicians knowledge of RR 320 doctors | Training video (Gp 2) Time intervals Effect of timer | 319 Qre received Indrawing Gp 1 sens 79%, spec 75% lower & error rate 23% higher than Gp2 sens 82%, spec 81% & error rate 18% Counting rates over 60 secs more accurate than 30 secs resulted in more | | | | | | + excellent |

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| | | | | <p>false positives 25% than 60 second 17% no difference in false negative 6%</p> <p>RR 30 secs 2-4/min, over 60 secs</p> <p>Accuracy of RR is lower age < 2 years:</p> <p><2/12s sens 76%, spec 91%, error rate 16.5% 2-12/12s sens 97%, spec 91%, error 5.5%</p> <p>Counting rates with timers same as second hand watches</p> | | | | | | |
| Mai, 1995 | X section Prospect | <p>Australia, hospital</p> <p>71 kids < 15 months mean age 4.5 months</p> | <p>Need for O2 Decided by clinician</p> <p>Parameters checked RR, HR, wheeze, crackles, recession</p> | <p>40/71 (56%) needed O2</p> <p>Inter-observer agreement good for cyanosis, fair for most parameters, poor for intercostal recession</p> <p>Children requiring O2 had RR 56.8 vs 51.6 not significantly different</p> <p>Children requiring O2 HR 150.1 vs 149.2</p> | | | <p>cyanosis, intercostal recession (RR 2.55), sternal retraction (RR 1.60) predicted need for supplement al O2</p> | | | + |
| Maneker 1995 | X section Prospect | <p>Urban univ hospital in States 368 kids < 8yrs with resp illness</p> | <p>Oximetry measured Hypoxia = <92%</p> <p>Which parameters</p> | <p>Doctors picked low sats in 23 of 69 patients</p> <p>Single clinical parameters; clinical = sens 33%,</p> | | | | | | + |

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| | | <p>16% <6/12s 59% 7-36 months age</p> <p>variety Dx including asthma, bronchiolitis, pneumonia</p> | <p>predict low saturation</p> | <p>spec 86% retractions = sens 88%, spec 40% tachypnea = sens 80%, spec 35% wheezes = sens 80%, spec 36% decreased aeration = sens 52%, spec 64% rales = sens 31%, spec 75% flaring = sens 25%, spec 83% grunting = 7%, spec 97%</p> <p>Combinations of parameters; retractions or wheezes = sens 98.5%, spec 20% retractions or tachypnea = sens 98.5%, spec 24% tachypnea or wheezes = sens 97%, spec 15% decreased aeration or retractions = sens 92%, spec 33% decreased aeration or tachypnea = sens 89%, spec 29% retractions or clinical assessment of low = sens 88%, spec 39%</p> <p>Change in Mx 91% in unexpected group vs 43% expected Admit 28% unexpected, 4% known O2 commenced in</p> | | | | | | | |
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| | | | | 82% unexpected, vs 39% known | | | | | | |
| Morley, 1990 | X section Prospect | 2 centres Melbourne Australia, Cambridge UK 1007 infants = 298 well 709 hospital 225 respy illness xray pos in 30 | RR 3 X 15 seconds Done 5 times (35 page manual) | RR well 58/min RR sleep 42/min vs awake 56/min URTI 61/min LRTI 65/min Retractions nil 60/min. mild 60/min, severe 65/min Poor coreltn with temp | | | | | | + excellent but over 15 seconds |
| Mower 1997 | X section Prospect | Emerg dept Uni hospital USA < 18 yrs age 2602 305 OXM<95% | Change in Mx following oximetry measurement | 82 additional tests 39 new Tx 5 then admitted Compared to 1822 >95% 12 additional tests 22 new Tx 5 then admitted Physicans most likely to change when satn 89-92% | | | | | | 0 older children excellent study "oximetry 5 th paed sign" |
| Onyango 1993 | X section Prospect Observational | Paed casualty ward, Kenya at altitude 256 children <3 years age | Clinical parameters correlation of hypoxia Hypoxia <90% 151 hypoxia | RR >70/min best predictor of hypoxia Hypoxia predicted CXR abnormality sens 71%, spec 55% Mortality 10% Only 11% hypoxic children thought to be cyanosis | | RR 4.3 mort with hypoxia RR 1.03 xray pneumonia | | | | 0 normal had mean 95.7% high mortality only few <2months |
| Rajesh 2000 | X section Prospect | 200 infants emerg hospital Hehru + | RR that predicts hypoxiaRR | pneumonia 34%, bronchiolitis2%, septicaemia 12%, meningitis 6%, heart failure3.8 %, birth | | | | | | 0 lots Dx good in 2 centers |

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| | | Chandiargh India mean age 28 days resp infection | | asphyxia 8%, acute gastroenteritis 2.5%, URTI 3.8% 77/200 hypoxia Negative correlation between RR and oximetry (1= -0.39, p < 0.001) RR of 60/min = 80.5% sens, 68% spec, positive predictive value 61, negative predictive value 85% | | | | | | | |
| Simoes 1991 | X section Prospect t | 3 locations Colorado OP, IP, neonatal unit < 5 years age n= 97 20 LRTI, 34 URTI, 43 controls | RR by observer counts Effect of age, illness, state Count: 30 secs 60 secs 30secs Repeated 5 times | Variance large for 30 secs Better for 30 + 30 Diff bet min + max in counts 15.6/min Failures 13%< 2 months age, 8%>2 months, 16% agitated | | | | | | | + good study if repeated though may have tried to get about the same huge variation in counts |
| Pavon, 1999 | X section Prospect | Hospital Santiago 136 wheezing episodes <12 months | RR, work of breathing, + auscultation to predict pneumonia CXR positive Hypoxia <91% Clinical score 0-3 on RR, wheezing, cyanosis, accessory muscle use | Score as whole best indicator i.e. if 8 or more sens 100%, spec 84.6% 105 negative predictive value RR worse correlation for wheeze, Better with pneumonia Accessory muscle use best correlation with wheeze | | | | | | | + |
| Kneyber 2001 | X section Prospecti ve Multivaria | OP or admission 1 st set derived factors | Abnormal CXR Which clinical factors predict | Normal = Increased postnatal age, high birthweight, rhinitis, no retractions, high O2 | | | | | | | + no info in interobserv er reliability |

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| | te analysis | 232 children dx with RSV CXR 202 2 nd set tested 55, RSV pos, 93% CXR | Xray = normal vs abnormal | | | | | | | |
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