

EVIDENCE TABLE

for CXR – Bronchiolitis & Pneumonia

Clinical question: Can CXRs differentiate between bronchiolitis and pneumonia?

Study authors and year	Study Design	Participants	Exposure/ Comparison	Outcomes	Results					Quality Scores
					EER	CER	RR	RD	NNT	
Madico 1995	X section, prospective	Ped emerg dept, Lima Peru Hypoxia < 96.6%	Compare oxim to WHO algorithm to pick LRTI, pneumonia, xray confirmed pneumonia Definitions of URTI, LRTI, Pneumonia & xray pneumonia on summary	160/269 (59%) had pneum mean sat 93.8%+ nonpneum mean sat 98.7% Oxim detected 88%, WHO 90% pneum Both detected 72% CXR pneum						Φ Not sure about divisions – lots of overlap Both better at picking up LRTI rather than CXR changes per se
Friss 1990	X section	Hosp admission Within 24 hours admission 128 children	Respiratory cultures of CXR 37 bac + viral 39 viral 25 bac 27 nil	33% viral normal xrays only small number of other groups had normal xray lobar pneumonia found in RSV pos < 6 months age xrays not helpful in sorting out viral from bacterial						+
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Campbell, 1989	Cohort of children	500 X 0-4 years age Gambian children Assessed by field workers 222 episodes of LRTI confirmed by physician	Assessment of RR, feeding, fever, nasal faring, stridor, systemic upset Only in 81 (38%) CXR abnormal 25 (12%) lobar consolidation	Fever > 38.5, Vomiting, refusal to feed, RR > 60/min best correlation Bronchial breathing most accurate to distinguish abnormal CXR	Comment: Slightly different findings from other studies Rural						+
Harari 1991	Cross section, prospective	Outpatient clinic Papua New Guinea Rural villages Age 8 weeks to 6 years 185 children 1 st 95 assessed regardless of RR, next 90 studied if	Tachypnea, chest in-drawing, specific RR, breathless, nasal flaring, age < 24 months, fever, sleeping poorly, crepitations, temperature >38, feeding poorly, cough > 2 days Excluded	RR > 50/min + indrawing best predictors of pneumonia More complex definition (RR with age) no added benefit 30% had xray evidence of pneumonia			Despite all clinical diagnosis of LRTI – only 30% positive CXR				Φ

		RR > 40/min	wheeze, stridor, measles, pertussis All CXR							
Madico 1995	X section, prospective	Ped emerg dept, Lima Peru Hypoxia < 96.6%	Compare oxim to WHO algorithm to pick LRTI, pneumonia, xray confirmed pneumonia Definitions of URTI, LRTI, Pneumonia & xray pneumonia on summary	160/269 (59%) had pneum mean sat 93.8%+ nonpneum mean sat 98.7% Oxim detected 88%, WHO 90% pneum Both detected 72% CXR pneum						Φ Not sure about divisions – lots of overlap Both better at picking up LRTI rather than CXR changes per se
Taylor, 1995	X section, Prospective	Emerg dept, Seattle < 2 yrs age	RR – what level predicts abnormal CXR Dx pneumonia Excluded wheezing or stridor RR over 60 seconds	572 kids, Pneum in 123 xray changes in 41 agreement by radiol 0.55 defined age RR RR sens 73.8%, spec 76.8%, pos pred value 20.1%, neg pred value 97.8%						+ small numbers by time of xray
Kneyber 2001	X section Prospective	OP or admission 1 st set derived	Abnormal CXR Which clinical factors predict	Normal = Increased postnatal age, high birthweight, rhinitis,						+ no info in interobserver

	Multivariate analyses	factors 232 children dx with RSV CXR 202 2 nd set tested 55, RSV pos, 93% CXR	Xray = normal vs abnormal	no retractions, high O2						reliability
Dele Davies 1996	X section Prospective blinded	Tertiary, paed hospital 3 radiologists on 2 occasions 40 CXR of 148 infants	CXR predictive of LRTI in infants 40 xrays 25 pneumonia 15 bronchiolitis	Within observer agreement = 0.85, 0.76, 0.87, 0.86, 0.91 Between observer agreement = 0.83, 0.55, 0.82, 0.78, 0.79						+
Friss 1990	X section	Hosp admission Within 24 hours admission 128 children	Respiratory cultures cf CXR 37 bac + viral 39 viral 25 bac 27 nil	33% viral normal xrays only small number of other groups had normal xray lobar pneumonia found in RSV pos < 6 months age xrays not helpful in sorting out viral from bacterial						+
Kiekara 1996	X section retrospective	Finland Tertiary paed hospital 3 radiologist 2 review	40 xrays <6months age 25 pneumonia 15 bronchiolitis	Within observer agreement = 0.85, 0.76, 0.87, 0.86, 0.91 Between observer agreement = 0.83, 0.55, 0.82, 0.78, 0.79						0 small numbers

Swingler 1998	RCT, prospe ctive	Capetown, Red Cross hospital	562 children aged 2 -58 months 259 CXR, 263 control	Impact of CXR in LRTI on outcome Time to recovery, by 2 weekly telephone calls Dx, Mx 46% both groups recovered by 7 days antibx 60% xray, 52% no difference in health use Pneumonia + URTI dx more often in xray group			RR of xray 1.08 Not altered for age, weight, duration, RR, clinican qualificati on			+ Excellent xray not helpful Tho did alter some paramet ers
Swischuk	X section prospe ctive		110 started 84 in study Pnuemonia dx with 2 of either duration, fever WCC, agglutinins, response to tx	Can xray differentiate between pneumonia, viral Overall accuracy 90% RR not good predictor Interobserver agreement good for cynosis, fair for other parameters, poor for intercostal recession			RR cyanosis 2.55 RR intercostal recession 2.55, RR sternal retraction 1.6 Predicted O2			0

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