

SDC 2: Factors associated with death amongst children <5 years hospitalized with acute lower respiratory infection (LRTI) at four sentinel surveillance sites, South Africa, 2009-2012

Characteristics		Case-fatality ratio (%)	Univariate analysis OR (95% CI)      p		Multivariable analysis† OR (95% CI)      p	
Demographic characteristics						
Age group (months)	<12	118/5560 (2)	Reference	<0.001		
	12-23	18/1742 (1)	0.5 (0.3-0.8)			
	24-59	14/1360 (1)	0.5 (0.3-0.8)			
Sex	Male	69/4977 (1)	Reference	0.004		
	Female	81/3685 (2)	1.6 (1.2-2.2)			
Race	Other race	5/158 (3)	Reference	0.164		
	Black African	144/8490 (2)	0.5 (0.2-1.3)			
Year	2009	34/2175 (2)	Reference	0.001	Reference	0.001
	2010	55/2003 (3)	1.8 (1.2-2.8)		2.5 (1.2-5.2)	
	2011	35/2331 (2)	1.0 (0.6-1.5)		1.3 (0.6-2.9)	
	2012	26/2153 (1)	0.8 (0.5-1.3)		0.9 (0.4-2.1)	
Site	CHBAH	52/5987 (1)	Reference	<0.001	Reference	<0.001
	Matikwana and Mapulaneng	86/1185 (7)	8.9 (6.3-12.7)		10.8 (6.2-18.7)	
	Edendale	4/1054 (<1)	0.4 (0.2-1.2)		0.3 (0.1-0.8)	
	Klerksdorp	8/436 (2)	2.1 (1.0-4.5)		1.1 (0.4-2.9)	
Underlying medical conditions						
HIV status	Negative	46/5240 (1)	Reference	<0.001	Reference	<0.001
	Positive	47/695 (7)	8.2 (5.4-12.4)		3.7 (2.2-6.1)	
Underlying medical condition excluding HIV*	No	143/8458 (2)	Reference	0.352		
	Yes	5/194 (3)	1.5 (0.6-3.8)			
2 or more doses of pneumococcal conjugate vaccine (eligible children)	No	34/2005 (2)	Reference	0.084		
	Yes	18/1733 (1)	0.6 (0.3-1.1)			

<5 years)

**Infectious agents identified**

Invasive bacterial infection on culture	No	195/4260 (5)	Reference			
	Yes	8/122 (7)	1.5 (0.7-3.0)			
Pneumococcal infection**	No	106/6316 (2)	Reference	0.025	Reference	0.036
	Yes	9/251 (4)	2.2 (1.1-4.4)		2.4 (1.1-5.6)	
Influenza (any type)	No	128/7731 (2)	Reference	0.204		
	Yes	6/609 (1)	0.6 (0.3-1.3)			
Adenovirus	No	94/5698 (2)	Reference	0.299		
	Yes	27/2050 (1)	0.8 (0.5-1.2)			
Enterovirus	No	120/7468 (2)	Reference	0.999		
	Yes	14/871 (2)	1.0 (0.6-1.7)			
Rhinovirus	No	98/5245 (2)	Reference	0.014		
	Yes	36/3094 (1)	0.6 (0.4-0.9)			
Human metapneumovirus	No	129/7838 (2)	Reference	0.269		
	Yes	5/501 (1)	0.6 (0.2-1.5)			
Parainfluenzavirus 1	No	130/8179 (2)	Reference	0.369		
	Yes	4/160 (3)	1.6 (0.6-4.3)			
Parainfluenzavirus 2	No	131/8222 (2)	Reference	0.398		
	Yes	3/116 (3)	1.6 (0.5-5.2)			
Parainfluenzavirus 3	No	125/7808 (2)	Reference	0.863		
	Yes	9/530 (2)	1.1 (0.5-2.1)			
Respiratory syncytial virus	No	120/6135 (2)	Reference	<0.001	Reference	0.041
	Yes	14/2204 (1)	0.3 (0.2-0.6)		0.5 (0.2-0.9)	
<b>Clinical presentation and course</b>						
Duration of symptoms prior to admission	< 2 days	60/3843 (2)	Reference	0.276		
	≥ 2 days	88/4716 (2)	1.2 (0.9-1.7)			
ICU admission	No	145/8497 (2)	Reference	0.179		
	Yes	4/109 (4)	2.2 (0.8-6.0)			
Mechanical ventilation	No	128/8512 (2)	Reference	<0.001	Reference	<0.001
	Yes	21/95 (22)	18.6 (11.1-31.1)		6.9 (2.7-17.6)	

Supplementary Oxygen therapy	No	30/5579 (1)	Reference	<0.001	Reference	<0.001
	Yes	119/3029 (4)	7.6 (5.1-11.3)		27.3 (13.2-55.9)	
Antibiotics prescribed on admission	No	7/576 (1)	Reference	0.322		
	Yes	142/7847 (2)	1.5 (0.7-3.2)			
Duration of hospitalization (days)	<2	22/3238 (1)	Reference	<0.001		
	2-7	85/4001 (2)	3.2 (2.0-5.1)			
	>7	42/1362 (3)	4.7 (2.8-7.9)			

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OR – Odds ratio, CI – confidence interval, HIV – human immunodeficiency virus

\*Asthma, other chronic lung disease, chronic heart disease (valvular heart disease, coronary artery disease, or heart failure excluding hypertension), liver disease (cirrhosis or liver failure), renal disease (nephrotic syndrome, chronic renal failure), diabetes mellitus, immunocompromizing conditions excluding HIV infection (organ transplant, immunosuppressive therapy, immunoglobulin deficiency, malignancy), or neurological disease (cerebrovascular accident, spinal cord injury, seizures, neuromuscular conditions). Comorbidities were considered absent in cases for which the medical records stated that the patient had no underlying medical condition or when there was no direct reference to that condition.

\*\* Detected on *lytA* PCR or blood culture

\*\*\*Pathogen isolated within 72 hours of hospitalization from blood or pleural fluid; organisms viewed as likely contaminants were excluded

\*\*\*\*Co-infection with at least one of parainfluenza virus 1, 2 and 3; respiratory syncytial virus; enterovirus; human metapneumovirus; adenovirus; rhinovirus in addition to influenza

†Odds ratios and p values shown for all variables included in the multivariable model. Hosmer-Lemeshow goodness of fit test for the final multivariable model p=0.54.