

Outcome of children with asthma syndrome and pneumonia in Mulago hospital, Uganda

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Introduction

- Acute asthma and pneumonia are common paediatric emergencies
- The burden of asthma syndrome (33%) and pneumonia (62%) among children with cough and difficult breathing in Mulago hospital is high (Nantanda et.al 2012)
- Asthma is commonly mis-diagnosed as pneumonia: 6% routine diagnoses vs 33% (Kjaer 2011, Nantanda et.al 2012)

Introduction

- Hence, outcome of children with asthma syndrome may be attributed to pneumonia
- This impacts on understanding, management and prevention of asthma and pneumonia
- Most studies on outcome of asthma syndrome were done in developed countries
- Little information on clinical outcomes of children with asthma syndrome in low-income countries

Study objectives

1. To determine the outcome of children aged 2-59 months with asthma syndrome and pneumonia in Mulago hospital
2. To describe the factors associated with outcome of children 2-59 months with asthma syndrome and pneumonia
3. To compare the outcome of children with asthma syndrome and pneumonia.

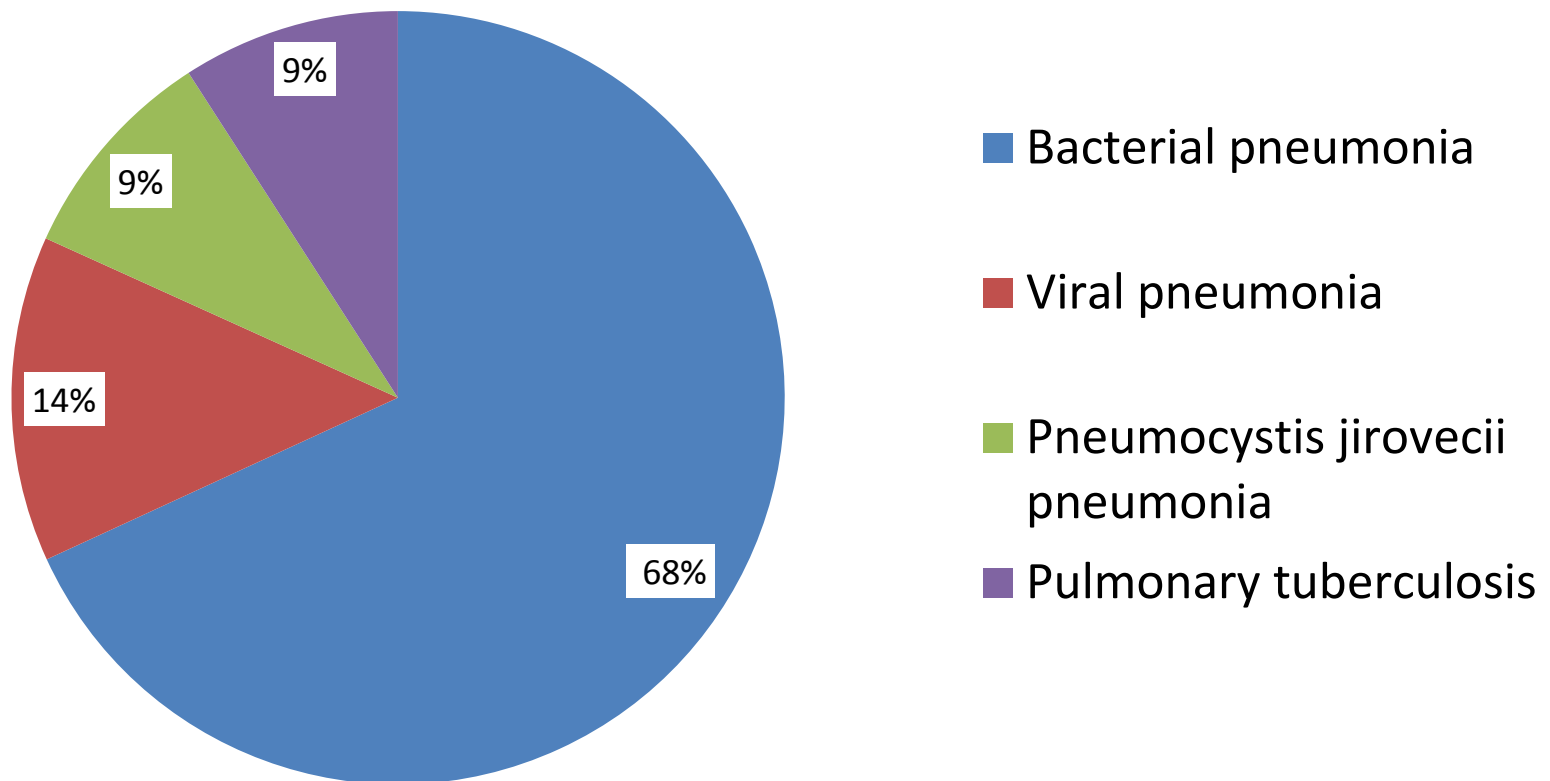
Methods

- Prospective study involving 614 children who presented at emergency paediatric unit of Mulago hospital, with cough and difficulty in breathing
- Conducted interviews (questionnaire) with caretakers
- Physical examination
- Investigations: CBC, CXR, C-reactive protein, Blood culture, NPS for RSV, blood smear for malaria parasites, HIV
- Follow up every 12 hours until discharge
- Diagnoses were made post hoc by a panel of 3 paediatricians guided by study definitions.

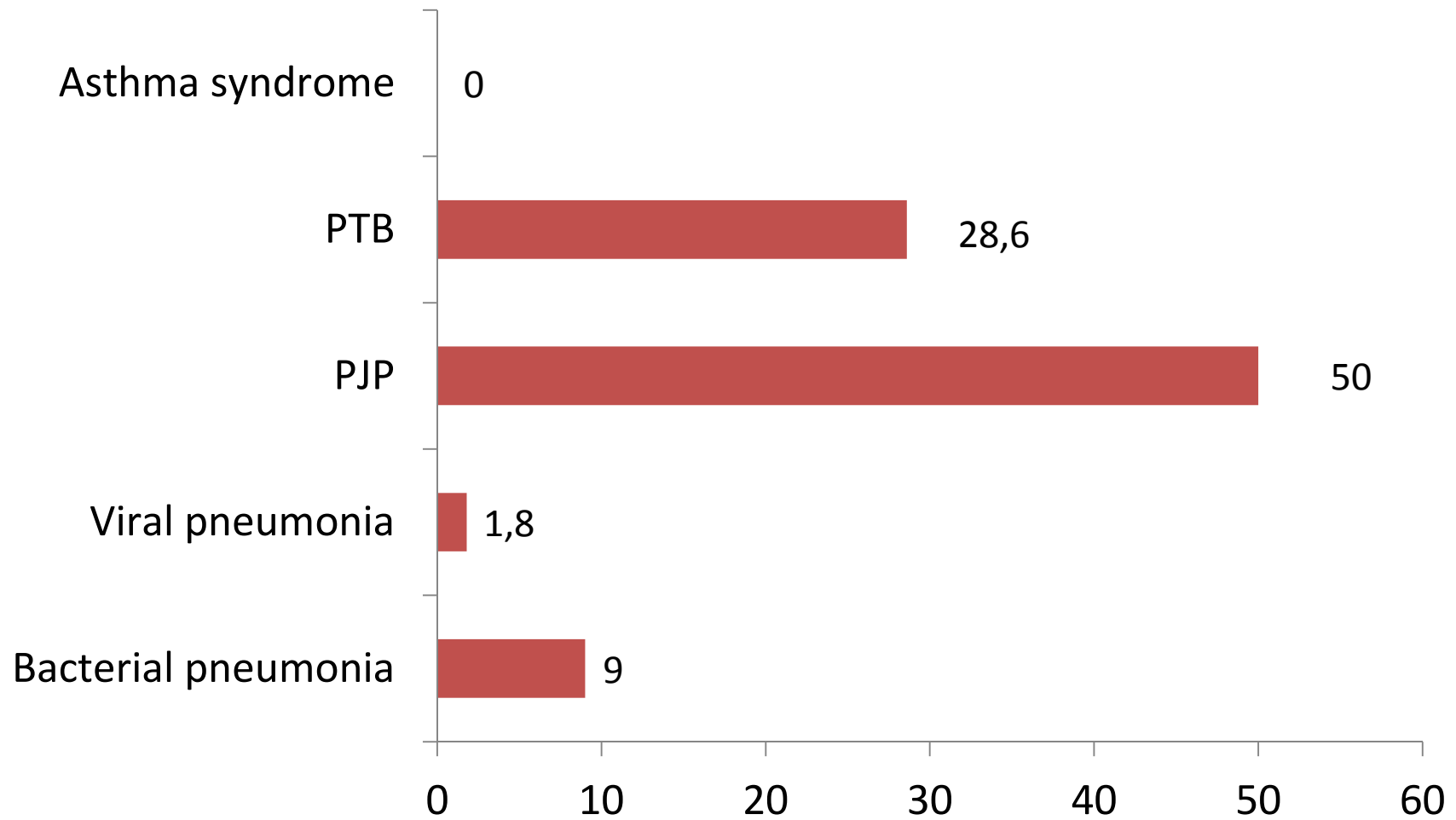
Characteristics of study participants N=614

Variable	Asthma syndrome N=203	Bacterial pneumonia N=167	Combined asthma and bacterial pneumonia N=50	Viral pneumonia N=165	Overall N=614
Mean age (months)	12.8 (12.3)	15.3 (11.6)	23.0 (16.2)	12.4 (9.6)	14.3 (12.1)
Proportion <12 months (%)	63.5	46.1	34.0	56.4	54.2
Mean duration of symptoms (days)	5.9 (7.8)	9.4 (13.0)	6.4 (9.9)	7.5 (9.3)	7.7 (11.1)
Mean duration of hospital stay (days)	3.0 (2.6)	4.7 (4.9)	4.5 (4.4)	4.1 (4.1)	4.0 (4.2)
Case fatality rate (%)	0.0	9.0	0.0	1.8	3.6

Causes of death among children cough and difficult breathing in Mulago hospital, Uganda: Aug 2011-June 2012 (N= 614)



Percent mortality among children with cough and difficult breathing in Mulago hospital, Uganda: Aug 2011-June 2012 (N=22)



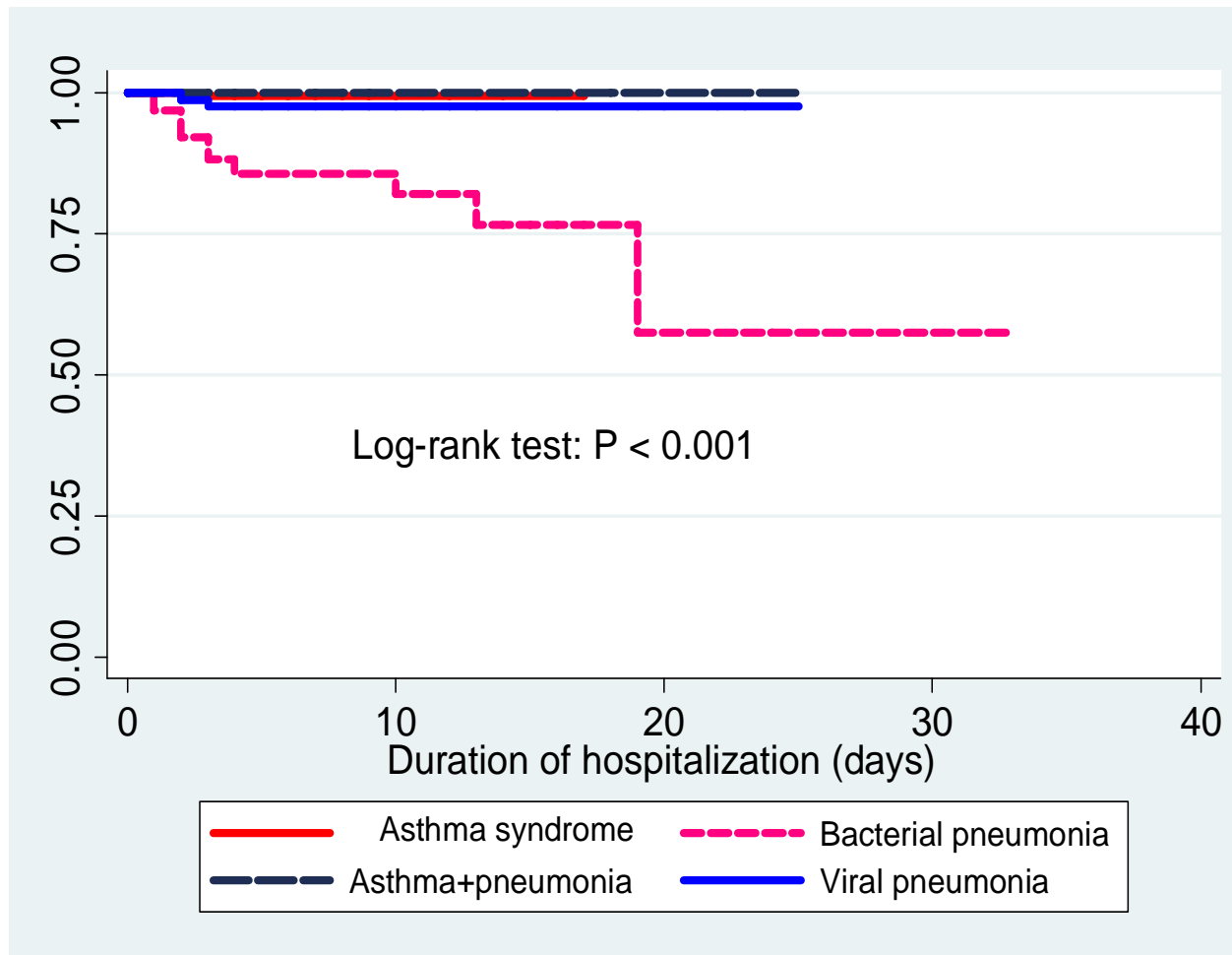
Factors associated with death among study participants N=592

Variable	Died		AOR (95% CI)	P value
	Yes	No		
Age < 12 months	13	306	1.3(0.4 - 4.7)	0.694
Peripheral oxygen saturation <92%	19	278	15.3 (3.1 - 76.7)	0.001*
Temperature ≥ 38°C	4	170	3.1 (0.8 - 11.9)	0.105
HIV infection	6	32	2.6 (0.6 - 10.5)	0.182
Severe malnutrition	12	151	11.0 (3.0 - 40.8)	0.000*
Low level of education of caretaker	7	271	9.5 (1.5 - 62.5)	0.016*
Male sex	8	323	1.2(0.4 - 3.7)	0.729
RSV infection	1	97	9.8 (0.8 - 111.1)	0.070

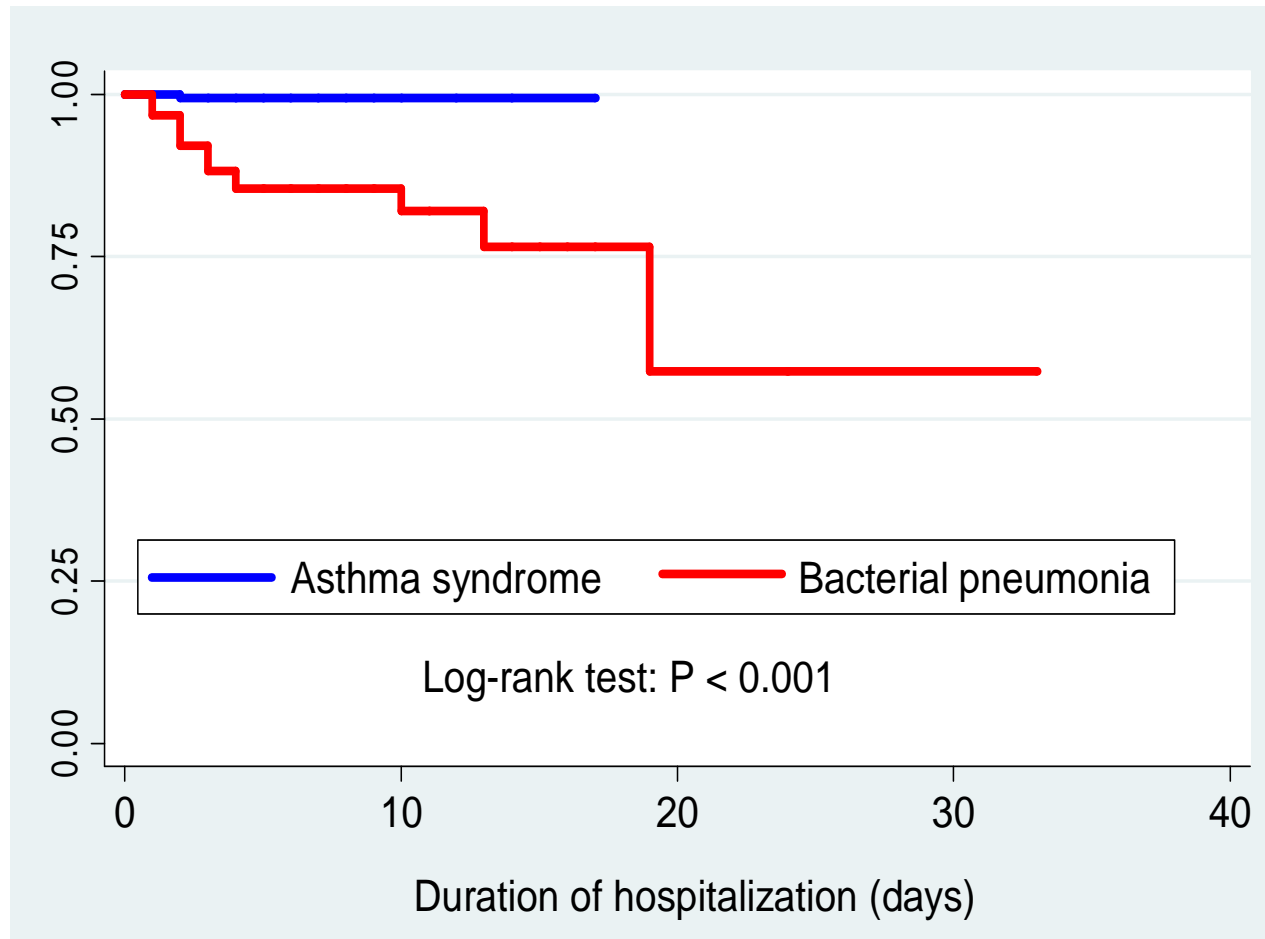
Factors associated with prolonged hospitalization among children with asthma syndrome N=592

Variable	Asthma syndrome		COR (95% CI)	P value	AOR (95% CI)	P value
	Yes	No				
Age < 12 months	129	204	4.8 (1.7-12.5)	0.002	5.6 (1.67- 20.0)	0.005*
SO2 <92%	105	207	1.55 (0.7-3.2)	0.231	-	-
Male sex	127	220	1.2 (0.6- 2.5)	0.649	-	-
Temperature >38C	43	137	2.3 (1.1-5.0)	0.032	1.9 (0.8- 4.8)	0.147
RSV infection	39	59	1.4 (0.6-3.25)	0.439	-	-
Malaria	52	110	1.4 (0.66-3.11)	0.352	-	-
Malnutrition	32	165	10 (0.89-116.77)	0.061	38.6 (2.2-688)	0.013*
Low level of education of caretaker	93	194	1.3 (0.14 -12.57)	0.802	-	-
Lack of exclusive breastfeeding for ≥3 months	90	170	4 (1.2 – 14.3)	0.023	4 (1.0- 1.7)	0.056*
Prematurity	10	18	1.1 (0.2- 5.3)	0.915	-	10 -

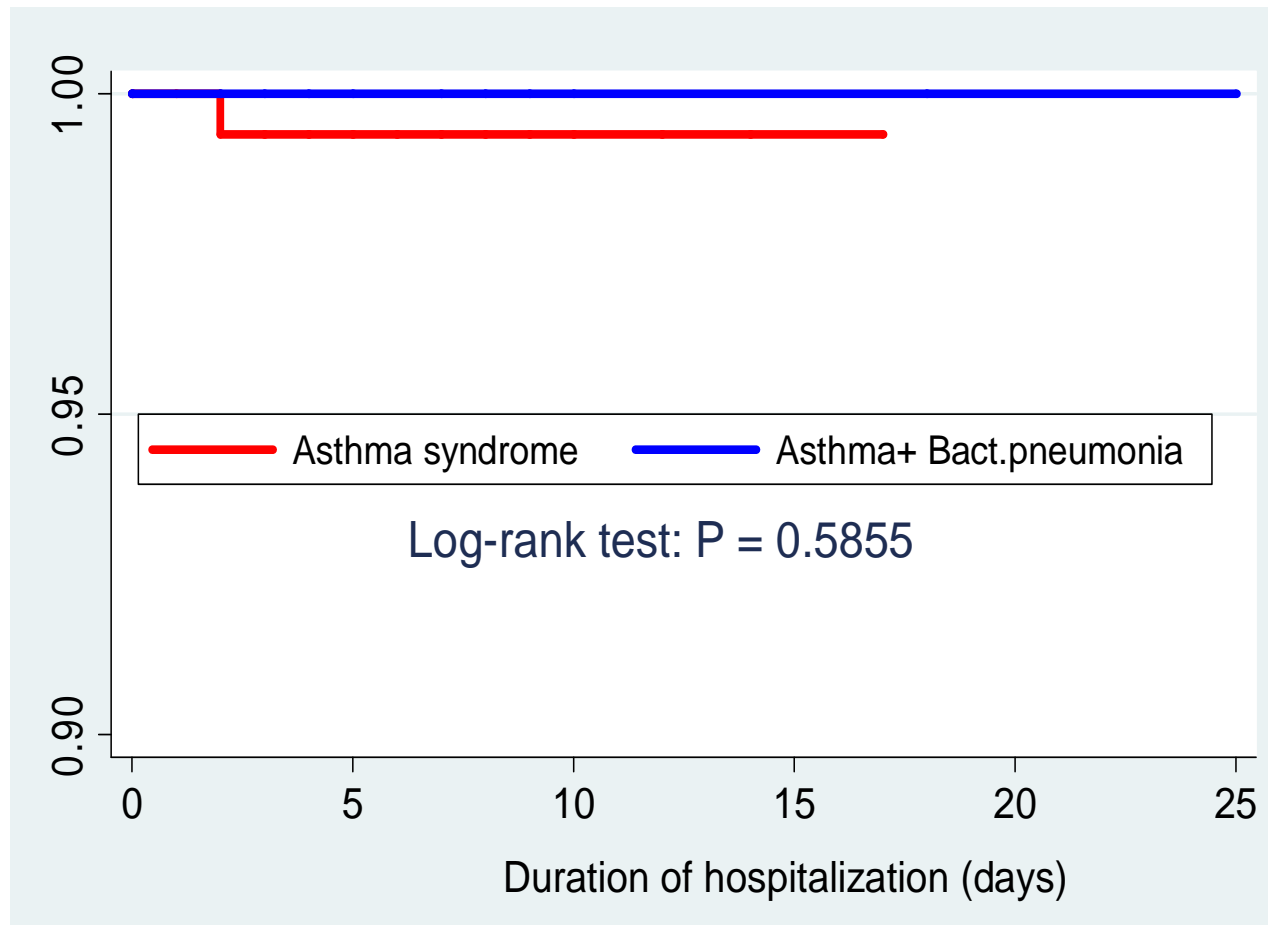
Comparing outcome of children with asthma syndrome and pneumonia



Asthma syndrome and bacterial pneumonia



Asthma syndrome and asthma +bacterial pneumonia



Strengths and limitations

Strengths

- Prospective study with close monitoring of study participants
- Stringent study definitions for asthma and pneumonia

Limitations

- No autopsies to confirm cause of death
- Study team had no control over choice of and timing of medication

Conclusions

- Children with asthma syndrome have good prognosis
- Among children with asthma syndrome, infants and those who exclusively breastfed for less than 3 months experience long duration of hospitalization.
- Malnutrition, low peripheral oxygen saturation ,low level of education of caretaker are associated with poor prognosis among children with cough and difficult breathing.
- Children with bacterial pneumonia have more prolonged hospitalization compared to those with asthma syndrome

Recommendations

- Severe malnutrition and hypoxemia increase risk of death and should be considered in prevention and management protocols.
- Diagnosis and management of bacterial pneumonia may need to be strengthened to reduce mortality.

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