Burden of Acute Lower Respiratory Infection in Children in Thailand in 2010: Have We Achieved the National Target in Under-five Morbidity and Mortality?

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Background: *National reports indicate that morbidity and mortality from pneumonia among Thai children has decreased dramatically since the turn of the millennia; notwithstanding, pneumonia remains the leading cause of admission and death in Thai children under five years of age.*
Objective: *To assess the burden and pattern of acute lower respiratory infection in under-fives in Thailand from the health data in 2010.*
Material and Method: *Information on respiratory infection using the ICD10: J09-J22 was evaluated for the number of OPD visits, admissions, mortality, monthly incidence and co-morbidities of the mortality.*
Results: *73% of all OPD visits with ALRI were in under-fives: one-fourth of whom required hospitalization. Pneumonia is the leading cause of both admissions and mortality (3.22% and 11.29/100,000 population for this age group, respectively). The highest mortality was in the first year of life (39/100,000). One-fourth of the children (168/639) died within 24 hours of admission and septicemia was the most common co-morbidity.*
Conclusion: *The respective morbidity and mortality of pneumonia in under-fives fell far short of national targets. To achieve these targets, many key aspects are needed; such as, strengthening the knowledge of healthcare personnel, the cost-effectiveness researches on the causative organism detection and the expanding coverage of the preventable-vaccine.*

Keywords: *Acute lower respiratory infection, Pneumonia, Children under five*

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Acute lower respiratory infection is the leading cause of hospitalization and mortality in children worldwide. Pneumonia is the leading killer (except neonatal death), accounting for 1.8 million deaths in under-fives in 2007[1]. To achieve the Millennium Development Goal 4 (MDG4)-to reduce the mortality in under-fives by two-thirds by 2015, compared to 1990, the Global Action Plan for Prevention and Control of Pneumonia (GAPP) was developed to increase awareness of pneumonia, to scale up the use of proven interventions and to provide logistical guidance[2].

In Thailand, pneumonia is also the leading burden disease of children with an incidence of 4.7% and a mortality of 15.1 per 100,000, as reported in 1990[3]. Since then, the Acute Respiratory Infection in Children Program-with the Standard Case Management approach adopted and modified from the WHO recommendation-has been launched under the control of the Acute Respiratory Infection in Children (ARIC) Section, Bureau of General Communication Disease, Ministry of Public Health Thailand, with the aims to reduce the morbidity, the mortality and the inappropriate use of antibiotics for, pneumonia in under-fives[4]. The National Targets for morbidity and mortality as per the Ninth Five-Year National Health Development Plan (2002-2006) were supposed to decrease from 1.8% and 4/100,000 for this age group[4] to 1.8% and 2/100,000 by 2011 as per the Tenth Five-Year National Health Development Plan (2007-2011)[5], respectively.

A 2010 report from the Bureau of Epidemiology, Ministry of Public Health, revealed that the morbidity and mortality of pneumonia in under-fives decreased from 5.6% and 9.57/100,000 in 1993 to 1.58% and 1.74/100,000 in 2009, respectively[3]. If the authors focus on the last ten years, morbidity has persisted while mortality has slightly decreased and thus seems

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to have achieved the National Target of less than 2/100,000 and the MDG4 since 2003. In reality, these figures are not reliable due to under-reporting since the data are only sourced from the National Disease Surveillance (Report 506), which only gathered information from government health care units.

The objective of the present study was to assess the burden and pattern (*i.e.*, morbidity, seasonal variation and mortality) of acute lower respiratory infection in children and adolescents and analyzing this information from the Thai healthcare delivery system in 2010.

Material and Method

The present study is part of the "Health Situation Analysis of Thai People 2010: Implications for Health Education and Health Service Reform". The authors analyzed both in-patient and out-patient data from the three national insurance schemes in 2010. The information, using the ICD tabulation list, 10th edition, defines acute lower respiratory infection (ALRI) as: 1) pneumonia (J12-viral pneumonia not elsewhere classified, J13-due to *Streptococcus pneumoniae*, J14-due to *Haemophilus influenzae*, J15-bacterial pneumonia not elsewhere classified, J16-due to other infectious organisms not elsewhere classified, J18-organisms unspecified); 2) acute bronchiolitis (J21); 3) acute bronchitis and other unspecified (J20-acute bronchitis, J22 unspecified lower respiratory infection). However, influenza (J09-avian influenza, J10-other influenza virus, J11-influenza virus not identified) was also added to the analysis. The authors extracted and analyzed for the number of OPD visits, IPD admissions, length of hospital stay and mortality rates using subgroup classifications by age into <1, 1-5, 6-12 and 13-18 years of age. The authors also focused on pneumonia in the under-fives.

The authors calculated the OPD visits as a percentage of the population by age group and the mortality as per 100,000 populations by age group. According to availability of data, the denominator used in the calculation for OPD visits was the number of children under the Universal Coverage (UC) scheme. Hospital admissions and mortality were based upon both the UC and Civil Servant Medical Benefits (CSMB) scheme.

Results

Burden of illness of acute lower respiratory infection (ICD10: J09-J22)

Eight percent of all children and adolescents visited out-patient departments due to an acute lower respiratory infection (ALRI). Among these, acute bronchitis (J20) was the most common diagnosis in all age groups (63%; 765,830/1,214,204). Acute bronchitis is a non-specific diagnosis among ALRI in children; hence, it may overlap with acute bronchiolitis and pneumonia. Acute bronchiolitis (J21) and pneumonia (J12-J18) occurred in 15.4% and 13.2% of cases (186,855/1,214,204; 160,623/1,214,204), respectively. Surprisingly, acute bronchiolitis-a young children's disease (under 2 years)-was also reported in children more than 5 years of age (21,671 cases). Influenza (J09-J11)-for which there was a worldwide pandemic in 2010-occurred in 7.6% of all ALRI OPD cases (92,831/1,214,204) and 22% of influenza cases were hospitalized (20,191/92,831). Half of all ALRI admissions (49.8%) were pneumonia (J12-J18) (137,654/276,254); among which, 87% (120,097/137,654) were under-fives (Table 1-2).

Twenty-five percent of under-fives had an acute lower respiratory infection and needed hospital care (Table 3), which accounted for 73% of all ALRI OPD visits (891,392/1,214,204). ALRI (J00-J22) are also the leading cause of admissions and mortality in this age group (Fig. 1, 2). One-fourth of under-fives who visited OPD required hospital admission (231,104/891,392), which accounted for 6.2% of under-fives. Pneumonia was the most common cause of admission for 3.22% of the population under five. Acute bronchitis (J20) and unspecified lower respiratory infection (J22) was the second most common cause of admission (1.8%; 65,632/3,728,886). Acute bronchiolitis-which worldwide is the most common cause of hospitalization in young children-occurred in only 1.8% of children under 2 years of age (24,974/1,410,616) (Table 4).

Severity & co-morbidity

The overall mortality of ALRI was 3.96/100,000, while pneumonia was the most common cause of ALRI-associated death (95%; 608/639) (Table 2); of which 69% of cases were under-fives (11.29/100,000 by age group). The highest mortality rate was in the first year of life (39/100,000 by age group) (Table 4). Most of the children hospitalized with acute lower respiratory infection were discharged within one week (95%); a quarter of the total, however, (168/639) died within 24 hours of admission (Table 5). Septicemia was the most common co-morbidity of under-fives who died with pneumonia (24%), while congenital heart disease was the second co-morbidity (3%). Other conditions-*viz.*, malnutrition and HIV infection, which are common co-morbidities of pneumonia in high burden countries-

Table 1. Number of OPD visits of acute lower respiratory infection and influenza (ICD10: J09-J22) in Thai children age 0-18 years in 2010

Age	Total		< 1 year		1-5 year		6-12 year		13-18 year	
Population*	15,196,085	%	662,944	%	3,705,493	%	5,467,740	%	5,359,908	%
OPD all (J09-J22)	1,214,204	7.99	195,564	29.50	695,828	18.78	250,764	4.59	72,048	1.34
Pneumonia (J12-J18)	160,623	1.06	38,998	5.88	95,344	2.57	20,244	0.37	6,065	0.11
Influenza (J09-J11)	92,831	0.61	8,274	1.25	36,235	0.98	30,739	0.56	17,583	0.33
Others (J20-J22)	960,750	6.33	148,292	22.37	564,249	15.23	199,781	3.65	48,400	0.90
Acute bronchitis (J20)	765,830	5.04	102,714	15.49	439,393	11.86	179,328	3.28	44,395	0.83
Acute bronchiolitis (J21)	186,855	1.23	44,653	6.74	120,531	3.25	18,355	0.34	3,316	0.06
Others (J22)	8,037	0.05	925	0.14	4,325	0.12	2,098	0.04	389	0.007

*Population covered by UC Schemes 2010

Table 2. Number of admissions of lower respiratory diseases and influenza (J 09-J22) and death rates by age group of Thai children and adolescents in 2010

Age group (Population)*	All (16,155,592)				<1 yr (674,293)				1-5 yr (3,849,802)				6-12 yr (5,828,237)				13-18 yr (5,803,260)			
	Admit		Death		Admit		Death		Admit		Death		Admit		Death		Admit		Death	
	n	%	n	/100,000	n	%	n	/100,000	n	%	n	/100,000	n	%	n	/100,000	n	%	n	/100,000
Acute lower respiratory infections																				
J09-J22 All ARI	276,254	1.71	639	3.96	70,963	10.52	276	40.93	160,141	4.16	165	4.29	35,352	0.61	100	1.72	10,298	0.18	98	1.69
J09-J18 Pneumonia	137,654	0.85	608	3.76	38,686	5.74	266	39.45	81,411	2.11	155	4.03	13,987	0.24	92	1.58	3,570	0.06	95	1.64
- J12 viral pneumonia	16,311	0.10	11	0.07	4,921	0.73	6	0.89	9,974	0.26	2	0.05	1,218	0.02	1	0.02	198	0.003	2	0.03
- J13-J15 bacterial pneumonia	33,749	0.21	194	1.20	9,201	1.36	90	13.34	19,783	0.51	55	1.43	3,755	0.06	28	0.48	1,010	0.02	21	0.36
- J13 *S. pneumoniae*	122		1	0.01	27		0	0	61		1	0.03	19		0	0	15		0	0
- J14 *H. influenzae*	93		3	0.02	33		1	0.15	43		0	0	11		1	0.02	6		1	0.02
J09-J11 Influenza	20,191	0.12	22	0.14	2,379	0.35	4	0.59	8,584	0.22	7	0.18	5,788	0.10	8	0.14	3,440	0.06	3	0.05
J21 Acute bronchiolitis	35,980	0.21	4	0.02	13,052	1.94	3	0.44	21,446	0.56	1	0.03	1,381	0.02	0	0	101	0.002	3	0.05
J20,J22 Other lower respiratory infections	82,929	0.51	3	0.02	16,846	2.50	3	0.44	48,700	1.27	0	0	14,196	0.24	0	0	3,187	0.05	0	0

*Population covered by UC Schemes and CSMDS 2010

Table 3. Number of OPD visits in 2010 due to acute lower respiratory infection and influenza (ICD10: J09-J22) in Thai children under five years of age

Age	Total		0-1 yr		1-2 yr		2-3 yr		3-4 yr		4-5 yr	
Population*	3,610,506	%	662,944	%	717,039	%	737,870	%	746,410	%	746,243	%
J09-J22 all ALRI	891,392	24.69	195,564	29.50	247,825	34.56	197,234	26.73	150,617	20.18	100,152	13.42
J12-J18 Pneumonia	134,342	3.72	38,998	5.88	39,835	5.56	27,425	3.72	18,001	2.41	10,083	1.35
J09-J11 Influenza	44,509	1.23	8,274	1.25	10,578	1.48	9,366	1.27	8,809	1.18	7,482	1.00
J20 Acute bronchitis	542,107	15.01	102,714	15.49	142,243	19.84	124,603	16.89	102,112	16.68	70,435	9.44
J21 Acute bronchiolitis	165,094	4.57	44,653	6.74	53,923	7.52	34,701	4.70	20,616	2.76	11,291	1.51
J22 Unspecified	5,250	0.15	925	0.14	1,246	0.17	1,139	0.15	1,079	0.14	861	0.12

*Population covered by UC Schemes 2010

Table 4. Number and rate of acute lower respiratory infection admission and influenza (ICD10) per 1,000 and mortality per 100,000 Thai children under five years of age in 2010

Age (year)	Total	0-1 yr	1-2 yr	2-3 yr	3-4 yr	4-5 yr
Total admission (J09-J22)	231,104	70,963	69,756	45,116	29,268	16,001
Pneumonia (J12-J18)	120,097	38,686	36,197	23,135	14,550	7,529
Influenza (J09-J11)	10,963	2,379	2,979	2,301	1,933	1,371
Acute bronchitis (J20)	65,546	16,828	18,631	13,828	10,148	6,025
Acute bronchiolitis (J21)	34,498	13,052	11,922	5,828	2,625	1,071
Unspecified (J22)	86	18	27	24	12	5
Total mortality (J09-J22)	441	272	75	36	34	24
Pneumonia mortality (J12-J18)	421	262	71	33	31	24
Population covered by UC and Social Security Schemes 2010	3,728,886	674,293	736,323	761,343	775,648	781,289
Admission rate of all ALRI per 100 children (J09-J22)	6.2	10.52	9.47	5.93	3.77	2.05
Pneumonia admission (J12-J18) per 100 children	3.22	5.74	4.92	3.04	1.88	0.96
Mortality rate of all ALRI (J09-J22) per 100,000 children	11.83	40.34	10.19	4.73	4.38	3.07
Mortality rate of pneumonia (J12J18) per 100,000 children	11.29	38.86	9.64	4.33	3.99	3.07

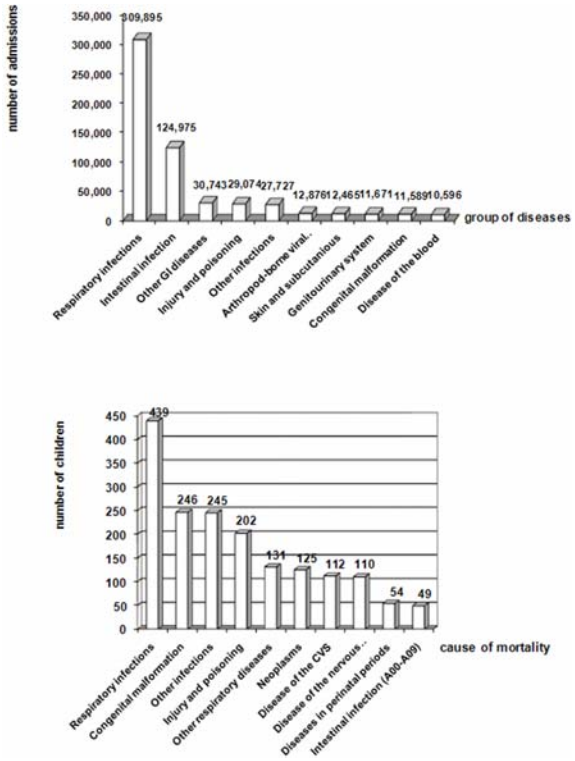

Fig. 1 Number of admissions in 2010 (upper) and top ten causes of mortality (lower) for Thai children between 1 and 60 months of age

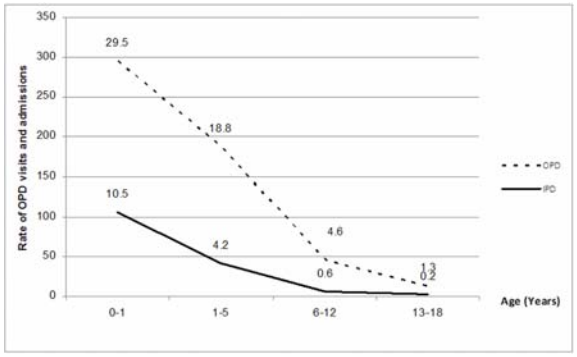

Fig. 2 Comparison of ALRI OPD visits and IPD per 1,000 children in 2010, by age group of Thai children under five years of age

were reported in only 6 and 5 patients, respectively (Table 6).

Seasonal variation

The monthly incidence of all ALRI indicated that these diseases occurred throughout the year but that the highest incidence occurs during the late rainy season (August-September) and the lowest during the summer months (April-May). Similar patterns presented for both OPD and IPD cases (Table 7, Fig. 3).

Causative organisms

The definite causative organisms of ALRI were under-reported (*i.e.*, 61% of suspected groups of organisms; 169,808/276,254). Viral causes accounted for 26% of cases (72,482/276,254: J12, J09-J11, J21); among which one-fourth (28%) were caused by influenza, which is a vaccine preventable disease. Similarly, *S. pneumoniae* and *H. influenzae* pneumonia-also vaccine preventable organisms-constituted 122 and 93 cases, respectively (Table 2).

Discussion

This current study used hospital-based data from the three national health insurance schemes to analyze the burden of acute lower respiratory infection among Thai children. The authors discovered that acute lower respiratory infection persists as an important public health problem among Thai children, especially in the under-five age group. The information gained from the present study is more representative of the real burden of illness than the National Disease Surveillance (Report 506), which has been widely used for strategic planning of the ARIC National policy. The current study showed that the morbidity of pneumonia in under-fives was about 3.72% of the population in their age group and that mortality was very high (*viz.*, exceeding by 6-fold the report from the Bureau of Epidemiology, Ministry of Public Health in 2009 (11.29 and 1.74/100,000, respectively)[3]. These figures, however, were still under-estimated since a number of children get medical services at private clinics and hospitals, the statistics of which were not included in the current study.

The three essential interventions recommended by the WHO under the Global Action Plan for Prevention and Control of Pneumonia (GAPP) are: 1) PROTECT by exclusive breastfeeding for six months; 2) TREAT by standard case management in community; and 3) PREVENT by increasing coverage of preventable vaccination[2]. Two of these-standard case management and promotion of six-month exclusive breastfeeding-have been widely implemented in all healthcare units under the ARIC Section, Bureau of General Communication Disease and the National Breastfeeding Project through the Baby-Friendly Hospital Initiative (BFHI), Ministry of Public Health, since 1990 and 1992, respectively[4,6]. The national target of morbidity and mortality of pneumonia in under-fives in the Tenth Five-

Table 5. Number and rate of ALRI admissions and deaths by duration of admission in days of illness of Thai children in 2010

Days	Number of admissions	% of admission	Number of deaths
1	33,068	11.9	168
2	76,606	27.7	48
3	66,604	24.1	30
4	41,732	15.1	37
5	24,206	8.7	27
6	13,973	5.0	28
7	8,086	2.9	18
8-14	10,298	3.7	105
15-21	1,163	0.4	54
22-28	449	0.2	35
> 28	638	0.2	89

Table 6. Number of deaths from pneumonia (J12-J18) and its co-morbidities (secondary diagnosis) in Thai children under five years of age

Co-morbidity	Pneumonia (J12-J18)
Malnutrition (E40, E41, E42, E43, E44, E45, E46))	6
Congenital heart disease (Q20, Q21, Q22, Q24, Q25, Q26)	12
Malformation of RS (Q32, Q33, Q34)	-
HIV (B20, B21, B22, B23, B24)	5
Septicemia (A40, A41)	97
Measles (B05)	-
Pertussis (A37)	1
Zinc deficiency (E60)	-

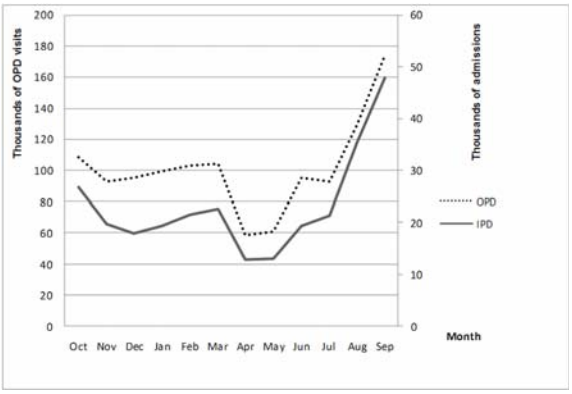

Fig. 3 Comparison of OPD visits and in-patient admissions (IPD) due to ALRI in 2010 by month, of Thai children age under five years of age

Year National Health Development Plan (2006-2011) was set to meet 1.8% and 2/100,000 by age group by 2011[5] and it appears that these targets had already been achieved. As for the Eleventh Five-Year National Health Development Plan (2012-2016), setting new targets has not been considered. The policy has also been changed to more preventive strategies. Nowadays, the ARIC section has been combined into the Vaccine Preventable Diseases and ARIC Section, Bureau of General Communication Disease, Ministry of Public Health and the focus will be upon vaccine preventable diseases[7]. The results of the current study showed that Thailand did not achieve its national targets (even in the Ninth Plan), especially with respect to mortality from pneumonia which was 5.6-fold greater than the national targets (Target 2/100,000 and the current study 11.29/100,000 by age group). Many attempts and more national strategies are needed to be developed in order to achieve the national targets and MDG4.

In order to decrease mortality, many key factors must be addressed. Firstly, there needs to be a strengthening of knowledge among healthcare personnel and caregivers regarding standard case management guidelines for primary healthcare levels. Sazawal et al have shown in a meta-analysis of nine

Table 7. Number of admissions with acute lower respiratory infection and influenza by age and month

	Total		≤ 1 year		1-5 years old		6-12 years		13-18 years	
	J12-J18	Others	J12-J18	Others	J12-J18	Others	J12-J18	Others	J12-J18	Others
October	14,305	12,359	4,181	3,130	8,580	7,261	1,236	1,489	308	479
November	10,071	9,624	2,787	2,266	5,846	5,475	1,161	1,456	277	427
December	8,790	9,020	2,630	2,455	4,791	5,112	1,073	1,164	296	289
January	9,252	10,106	2,646	2,419	5,114	5,534	1,175	1,682	317	471
February	9,976	11,394	2,743	2,493	5,629	5,980	1,300	2,174	304	747
March	10,788	11,737	3,118	2,977	6,158	6,532	1,201	1,770	311	458
April	6,507	6,309	2,062	1,986	3,669	3,551	555	576	221	196
May	6,426	6,627	1,817	1,720	3,791	4,004	632	718	186	185
June	9,017	10,322	2,298	2,290	5,495	6,269	951	1,352	273	411
July	10,190	11,108	2,581	2,285	6,295	6,558	1,056	1,751	258	514
August	17,888	17,260	4,835	3,400	11,077	9,557	1,603	3,129	373	1,174
September	24,457	23,290	6,988	4,856	14,966	12,897	2,044	4,104	459	1,433

studies that such guidelines have a significant impact on mortality among under-fives[8].

Secondly, proper diagnosis and identification of the causative organisms of ALRI at the hospital level should be clearly specified. Among the ALRI, pneumonia is the most serious disease and could be caused by a variety of organisms in all age groups. Acute bronchiolitis-mostly caused by virus-is a disease of young children under two years of age. Acute bronchitis-a less severe disease-is the most common syndrome in ambulatory patients. At the community level, most diagnoses are based upon clinical manifestations while the 'gold standard' investigation to confirm pneumonia is a chest radiograph. Some key physical signs may, however, help in the differential diagnosis and lead to the causative organisms; such as, fast breathing and chest in-drawing is suggestive of small airway or lung parenchyma disease (acute bronchiolitis or pneumonia); while wheezing is present more commonly in viral (RSV) than bacterial disease[9]. The diagnoses of all types of ALRI in the present study were mostly made by medical doctors as all of the data were hospital-based. The authors noticed that acute bronchitis-the less severe disease-ranked second among causes for hospitalization after pneumonia. Acute bronchiolitis-which is diagnosed in only young children-has also been diagnosed in older children and adolescents. Thus, it is important for the health education institutes to improve training to ensure proper diagnoses and management of patients.

Due to a limitation of resources, identification of the organisms causing ALRI among Thai children is under reported. Most of the epidemiological data of ALRI from Thailand are from the research, most of which are viral isolations. Suwanjutha et al demonstrated that nearly half of all ALRI admissions (45%) in under-fives are caused by respiratory viruses; among which RSV is the leading causative virus (45%)[10]. Some epidemiological work in rural communities in Thailand have found similar results[11-13] as well as seasonal variation of the RSV virus, which peaked in the rainy season (between July/August through October).

Definite identification of the bacterial pathogens causing pneumonia is difficult to perform especially at the community level. *S. pneumoniae* and *H. influenzae*-the two most common causes of severe pneumonia in under-fives[14]-were reported in only 122 and 93 cases, respectively, while bacterial pneumonia was reported in 25% of pneumonia admissions (33,749/137,654). The estimated incidence of pneumonia due to

S. pneumoniae in developing countries varies greatly from 18.1 to almost 200 per 100,000 children per year[15]. The peak season for pneumococcal pneumonia in developed countries is winter[16], closely corresponding to peak isolation rates of RSV while in tropical countries, they showed little seasonal variation or small peaks in the hot and rainy seasons[17,18]. The current study revealed that the numbers of both OPD visits and admissions of under-fives had a seasonal variation similar to the pattern of the respiratory virus (especially RSV). Notwithstanding, extensive epidemiologic studies for all the causative organisms in Thailand need to be performed.

The present study showed that among the deaths from pneumonia, septicemia was the major co-morbidity and a large number of children died within the first day of admission. In order to reduce deaths from pneumonia, empirical antibiotics are recommended for children suspected of having pneumonia in the developing world[4,14]. Such expanded use of antibiotics might lead to high levels of drug resistance[19] and Thailand has been already facing this problem. Notwithstanding, commercial kits are available in Thailand for detection of respiratory viral infection; therefore, extensive epidemiologic studies for all causative organisms and the cost-effectiveness of such analysis should be considered-both to prevent overuse of antibiotics and to reduce mortality.

Thirdly, many co-morbid conditions (*i.e.*, malnutrition, measles, AIDS, zinc deficiency)-which increase mortality from pneumonia among young children in developing countries-have been scarcely reported. Nowadays, although malnutrition and measles are not major problems among Thai children, HIV which is an increasing problem, was also under-reported. The standard of medical record keeping needs to be revised at all hospitals in Thailand because without accurate data, strategic planning is hindered.

Apart from the goal to reduce mortality from severe pneumonia in under-fives by 25% by 2015 (*i.e.*, compared to 2000 levels), the goal of GAPP is 90% coverage for all relevant vaccines-*viz.*, measles, pertussis, pneumococcal and *H. influenzae* type b, Hib (with at least 80% coverage in every district)[2]. The coverage of the pertussis and measles vaccines-under the expanding program on immunization in Thailand-has been over 90% since 1996[20,21]. Notwithstanding, the costly vaccines-pneumococcal and Hib-have been optional. This is due to the fact that (a) despite the reported efficacy of the pneumococcal vaccine[15], it does not cover all invasive serotypes and (b) the Hib vaccine's effectiveness against all causes of invasive Hib in the developed world[22], but non-typable strains have been found to be commonly or more commonly associated with pneumonia in several studies[23,24]. Since the definite causative organisms of pneumonia in Thai children is not known, the cost-effectiveness of using these vaccines should be investigated whether or not their use would assist in reaching the 25% reduction.

In conclusion-ALRI especially pneumonia-remains the most common burden of illness causing high morbidity and mortality among Thai children. The data show that the morbidity and mortality of pneumonia in under-fives fell far short of the national targets. In order to achieve these targets, with accurate information, many key aspects should be considered, including (a) strengthening the knowledge among healthcare personnel (b) cost-effectiveness research on-the causative organisms detection and the expanding coverage of the preventable-vaccine.

Study limitation

The data and information in the present study was collected from the primary through tertiary hospitals throughout Thailand. The reliability and validity of our results therefore depend on correct medical diagnosis and coding. It is possible that a misclassification bias may have occurred.

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Potential conflicts of interest

None.

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สภาวะปัญหาโรคติดเชื้อเฉียบพลันระบบหายใจส่วนล่างในเด็กในประเทศไทยในปี พ.ศ. 2553: อัตราการเกิดโรคและอัตราตายในเด็กอายุต่ำกว่า 5 ปีบรรลุเป้าหมายของประเทศแล้วหรือไม่

จามรี ธีรตกุลพิศาล, รัฐพล อุปลา, แก้วใจ เทพสุธรรมรัตน์, สุมิตร สุตรา

***ภูมิหลัง**: แม้รายงานอัตราป่วยและอัตราตายจากโรคปอดบวมในเด็กของประเทศจะลดลงอย่างรวดเร็วมาตั้งแต่ขึ้นทศวรรษใหม่ แต่พบว่าโรคปอดบวมยังคงเป็นสาเหตุของการเข้ารับการรักษาในโรงพยาบาลรวมทั้งเป็นสาเหตุการตายอันดับหนึ่งของเด็กอายุต่ำกว่า 5 ปี ของประเทศไทย*

***วัตถุประสงค์**: เพื่อประเมินสภาวะปัญหาและรูปแบบของโรคติดเชื้อเฉียบพลันระบบหายใจส่วนล่างในเด็กอายุต่ำกว่า 5 ปี ของประเทศไทย จากข้อมูลสุขภาพ พ.ศ. 2553*

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***ผลการศึกษา**: เด็กอายุต่ำกว่า 5 ปี มารับการรักษาด้วยโรคติดเชื้อเฉียบพลันระบบหายใจส่วนล่างร้อยละ 73 ของจำนวนผู้ป่วยเด็กที่มารักษาที่หอผู้ป่วยนอกทั้งหมดด้วยกลุ่มโรคนี้ หนึ่งในสี่ของเด็กเหล่านี้ต้องเข้านอนรักษาในโรงพยาบาล โรคปอดบวมเป็นสาเหตุอันดับหนึ่งทั้งในแง่อัตราป่วยต้องเข้านอนรักษาในโรงพยาบาลและอัตราตาย (อัตราป่วยนอนรักษาในโรงพยาบาลร้อยละ 3.22 ของเด็กวัยนี้ทั้งหมด อัตราตาย 11.29 ต่อประชากรเด็กวัยนี้ 100,000 คน) อัตราตายสูงที่สุดพบในเด็กขวบปีแรก (39 ต่อประชากรเด็กวัยนี้ 100,000 คน) เด็กที่เสียชีวิตจำนวนหนึ่งในสี่ (168/639) เสียชีวิตภายใน 24 ชั่วโมงแรกของการเข้านอนรักษาในโรงพยาบาล และภาวะติดเชื้อในกระแสเลือดเป็นโรคร่วมที่พบบ่อยที่สุดของเด็กที่เสียชีวิต*

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