

## ORIGINAL ARTICLE

# The Spectrum of Seven Preventable Diseases at the Pediatric Ward of Dr. Pirngadi Hospital Medan

by

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## Abstract

*A retrospective study on seven preventable diseases was done in 1989. We found 137 (7.1%) cases of all admissions; they were distributed into 12 neonatal tetanus (8.8%), 57 tetanus (41.6%), 17 measles (12.4%), 15 diphtheria (10.9%), 35 pulmonary tuberculosis (25.6%), and 1 poliomyelitis (0.7%). There was no admittance of pertussis; 62% of those cases consisted of under five-year-old children.*

*None of those patients had had measles immunization, and their mothers had not had tetanus toxoid immunization when they were pregnant.*

*The mortality were as follows : neonatal tetanus 4 (33.3%), tetanus 3 (5.3%), measles 1 (5.9%), pulmonary tuberculosis 9 (25.7%) and diphtheria 7 (46.7%).*

## Introduction

Infections such as neonatal tetanus, tetanus, measles, TBC and diphtheria remain as the leading causes of death in infants and children of under five years in Indonesia.

Actually those infectious diseases are preventable by immunization like BCG, DPT, polio and measles vaccinations for babies of 3-11 months. In addition, DT and TT immunizations may be given to primary-school children and TT to women of child-bearing age and pregnant mothers [1,2].

If the program of immunization is running well, it is expected that around 38% of babies and children of under five may be protected; thus indicating that immunizations may decrease the mortality of

babies and under five children [2].

In developed countries, many infectious diseases such as tetanus, diphtheria, and poliomyelitis have been eliminated; while diseases like pertussis, measles, miliary tuberculosis and tuberculosis meningitis have been effectively controlled [3].

Based on the reports from many hospitals in Medan, it is known that the incidence of seven preventable diseases are high; and the patients admitted to the hospitals usually had not had any immunization at all [4,5,6,7,8].

The purpose of this study is to assess the distribution of the seven preventable diseases, patients immunization status, mortality rate and the accompanying diseases.

## Materials and methods

This study was done retrospectively on patients admitted to the pediatric ward of Dr. Pirngadi Hospital / School of Medicine, University of North Sumatera, Medan, from January 1, 1989 until December 31, 1989. The data were obtained from medical

records of patients with the diagnosis of tetanus (including neonatal tetanus), measles, pulmonary tuberculosis, pertussis, diphtheria and poliomyelitis. The data collected were age, sex, immunization, mortality and accompanying diseases.

## Results

From 2986 hospitalized patients at the pediatric ward of Dr. Pirngadi Hospital / School of Medicine, University of North Sumatera, Medan, 137 (7.1%) had infections that may actually be prevented through immunization, the distribution of diseases was neonatal tetanus 12 (8.8%), tetanus 57 (41.6%), measles 17 (12.4%), diphtheria 15 (10.9%), pulmonary tuberculosis 35 (25.6%) and poliomyelitis 1 (0.7%). None of them suffered from pertussis. Eighty five of them (62%) were under fives (Table I). Sixty nine (50.4%) patients were males and 68 (49.6%) females (Table II). Four patients had had BCG immunization, 4 DPT, 4 polio, and none had had measles immunization.

None of the mothers had had tetanus-toxoid immunization during pregnancy (Table III).

The accompanying diseases commonly found in these patients were infection of the umbilical cord in neonatal tetanus (100%); pneumonia (12.3%); malnutrition (1.8%); vulnus punctum and laceratum (26.3%); and OMP (7%) in tetanus. We found measles complicated with bronchopneumonia (47.1%); encephalitis (23.5%), and malnutrition (17.6%). Pulmonary tuberculosis with serous meningitis (48.6%), malnutrition (20.3%), and bronchopneumonia [5,7]. Only one patient had diphtheria accompanied by bronchopneumonia. There was only one

poliomyelitis patients with bronchopneumonia (Table II).

Most of neonatal tetanus patients were born attended by traditional midwives (10 = 83.3%) and only two of them were attended by a midwife (16.7%). The treatments of the umbilical cords were iodine, alcohol, sulfa powder and traditional

medicines.

From 137 patients who died in the pediatrics ward of Dr. Pirngadi Hospital, Medan, in 1989, 24 (17.5%) were caused by preventable diseases, such as tetanus (5.3%), neonatal tetanus 33.3%, measles 5.9%, pulmonary tuberculosis 25.7%, and diphtheria 46.7% (Table V).

### Discussion

The percentage of patients with preventable diseases at the Department of Child Health Dr. Pirngadi Hospital Medan, was lower than the previous reports ranging from 7.5 to 11.2% [4,5,6,7,8]. In this study we found a figure of 7.1% in 1989.

Children under five years old remained as the highest percentage (85 = 62%) which similar previous studies [5,6,7,8]. Children under five years have a high risk for contracting infectious diseases, so that it is clear that the immunization program should be encouraged.

Tetanus is a leading cause (41.6%), followed by pulmonary tuberculosis (25.6%), measles (12.4%), diphtheria (10.9%), neonatal tetanus (8.8%), polio-

myelitis (0.7%) and none of our patients had pertussis.

From 57 tetanus patients, there had DPT when they were babies, one of them who was 9 years old had complete basic immunization of DPT without booster. The other 3 children had had only a single basic immunization of DPT.

The mortality of neonatal tetanus was 33.3% and tetanus was 5.3% which was lower than last year, 38.3% and 7.5%, respectively [7].

The mortality of measles in this study was lower (5.9%) compared with that of last year (24.8%) although the patients had complications of bronchopneumonia, encephalitis and malnutrition [8].

### Conclusion

From this study we found that children under five years were at high risk of infectious diseases and the mortality was

still high. The number of patients who had been vaccinated was low.

Table I. *Distribution of diseases according to age*

Age (years)	Diseases							Total	%	Cumulative percentage
	Neonatal tetanus	Tetanus	Measles	Diphtheria	TBC	Polio	Pertussis			
1	12	-	2	1	6	-	-	21	15.3	15.3
-5	-	28	11	7	18	-	-	64	62.0	62.0
-10	-	20	2	7	6	-	-	35	87.4	87.4
10 >	-	9	2	-	5	-	-	17	100.0	100.0
Total (%)	12 (8.8)	57 (41.6)	17 (12.4)	15 (10.9)	35 (25.6)	1 (0.7)	- (0.0)	137 (100)		

Table II. *Distribution of diseases according to sex*

Diseases	Male	%	Female	%	Number
1. Neonatal tetanus	7	58.3	5	41.7	12
2. Tetanus	34	59.6	23	40.4	57
3. Measles	5	29.4	12	70.6	17
4. Diphtheria	6	40.0	9	60.0	15
5. Pulmonary tuberculosis	16	45.7	19	52.3	35
6. Poliomyelitis	1	100.0	-	-	-
7. Pertussis	-	-	-	-	-
Total	69	50.4	68	49.6	137



Tabel III. Immunization status of patients

Diseases	Number of cases	Vaccinations in children						TT in mothers		
		BCG			DPT			POLIO		Campak
		I	II	III	I	II	III	I	II	
Neonatal tetanus	12	-	-	-	-	-	-	-	-	-
Tetanus	57	3	3	1	1	3	1	1	-	-
Measles	17	1	1	-	-	1	-	-	-	-
Diphtheria	15	-	-	-	-	-	-	-	-	-
Pulmonary tuberculosis	35	-	-	-	-	-	-	-	-	-
Poliomyelitis	1	-	-	-	-	-	-	-	-	-
Pertussis	-	-	-	-	-	-	-	-	-	-
Total	137	4	4	1	1	4	1	1	-	-

Tabel IV. Distribution of the accompanying diseases

Accompanying diseases	Neonatal tetanus		Measles		Diphtheria		Pulmonary tuberculosis		Poliomyelitis		Pertussis	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Bronchopneumonia	-	-	7	12.3	8	47.1	2	5.7	1	100	1	6.7
Encephalitis	-	-	-	-	4	23.5	-	-	-	-	-	-
Malnutrition	-	-	1	1.8	3	17.6	-	-	8	20.3	-	-
O M P	-	-	4	7.0	-	-	-	-	-	-	-	-
Vulnus ( <i>punctum and laceratum</i> )	-	-	15	26.3	-	-	-	-	-	-	-	-
Umbilical infection	12	100	-	-	-	-	-	-	-	-	-	-
Serous meningitis	-	-	-	-	-	-	-	-	17	48.6	-	-

Tabel V. Outcome of patients

Diseases	Number of cases	Outcomes					
		Recovered	%	Discharged against medical advice	%	Died	%
Neonatal tetanus	12	5	41.7	3	25.0	4	33.3
Tetanus	57	34	59.6	20	35.1	3	5.3
Measles	17	9	52.6	7	41.2	1	5.9
Diphtheria	15	2	13.3	6	40.0	7	46.7
Pulmonary tuberculosis	35	9	25.7	17	48.6	9	25.7
Poliomyelitis	1	-	-	1	100.0	-	-
Pertussis	-	-	-	-	-	-	-
Total	137	59	43.1	54	39.4	24	17.5

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