

## ABSTRACT

### Background:

Pertussis continues to circulate in the community & cases among adolescents and adults have been increasing. Waning of pertussis-specific immunity following natural infection or immunization may contribute to the persistent circulation. Even though it is not included in the extended programme of immunization in Sri Lanka, the booster doses including the adolescent booster dose of dTap,(acellular pertussis) are included into the list of recommended immunizations in several countries. Information on immunity to pertussis in this age group is needed before any vaccination policy can be considered.

### Objectives:

This cross sectional study is to determine the antibody levels against pertussis to determine the need and optimal age and frequency for booster immunization.

### Methods:

The quantitative determination of specific IgG antibodies to *Bordetella pertussis* toxin was done using a validated ELISA method which uses the value of <55 IU/ml, >55- <60 IU/ml, 60-125 IU/ml, >125 IU/ml as negative, borderline, positive, strongly positive, respectively. Sera of 385 asymptomatic individuals aged 4 -24 years admitted to surgical units of Lady Ridgeway Hospital, Colombo and Colombo South Teaching Hospital, Kalubowila were used for the study. Mann-Whitney U test and Kruskal-Wallis test were used in analysis of results and  $p \leq 0.05$  was taken as significant. Epidemiologic variables were collected by a questionnaire and analyzed for correlation with presence of absence of significant levels of pertussis antibodies

### Results:

Median age was 12 years (IQR 8-19) with 212 (55.1%) females. The median (IQR) anti PT antibody level was 3.31 IU/ml (0.73-15.12) and 352 (91%) had anti PT levels <55 IU/ml. Median (IQR) of anti PT levels were 3.18 IU/ml (0.591-8.00) for 4-7 years, 1.43 IU/ml (0.336-6.27) for 8-11 years, 4.28 IU/ml (0.978-13.39) for 12-15 years, 6.14 IU/ml (1.44-63.25) for 16-19 years and 4.89 IU/ml (1.11-16.78) for 20-24 years and the differences were statistically significant ( $p=0.000$ ). Females ( $p<0.003$ ) and those having a sibling aged >12 years ( $p=0.017$ ) had significantly higher anti PT levels.

### Conclusion:

The majority of the study population, especially 8 to 11 years age group had very low anti PT IgG levels. The infection may occur in early adolescence. A booster dose of acellular pertussis vaccine may be considered during adolescence