



**ELAV**

Estonian Paediatric Research Group



# Pertussis antibodies in entire population, among patients with pertussis and the time course up to three years after the disease

Piia Jõgi<sup>1,2</sup>, Marje Oona<sup>3</sup>, Tanel Kaart<sup>4</sup>, Tereza Maskina<sup>5</sup>, Iris Koort<sup>6</sup>,  
Anneli Rätsep<sup>3</sup>, Irja Lutsar<sup>1</sup>, Pertussis study group of Estonia

<sup>1</sup>Department of Microbiology, University of Tartu, Tartu, Estonia; <sup>2</sup>Children's Clinic of Tartu University Hospital, Tartu, Estonia; <sup>3</sup>Department of Family Medicine, University of Tartu, Tartu, Estonia; <sup>4</sup>Institute of Veterinary Medicine and Animal Sciences, Estonian University of Life Sciences, Tartu, Estonia; <sup>5</sup>General practitioner, Family Doctors' Centre "Tereza Maskina FIE", Paide, Estonia; <sup>6</sup>General practitioner, Merekivi Family Doctors' Centre, Tallinn, Estonia

Funded by Estonian Science Foundation, grant 9259

## ESPID 2017



35<sup>TH</sup> ANNUAL MEETING OF THE  
**EUROPEAN SOCIETY FOR  
PAEDIATRIC INFECTIOUS  
DISEASES**  
Organised jointly by ESPID and the ESPID Foundation



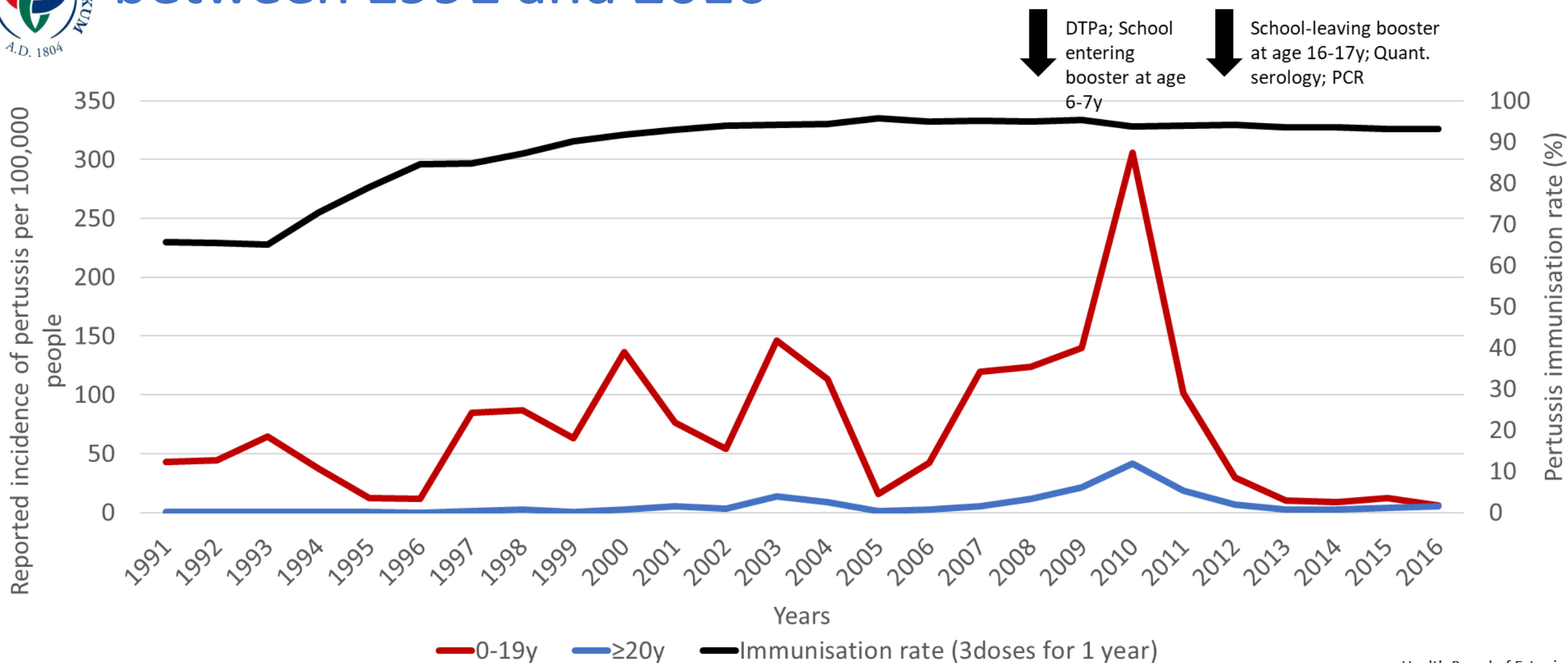
MADRID  
SPAIN  
23-27 MAY  
2017



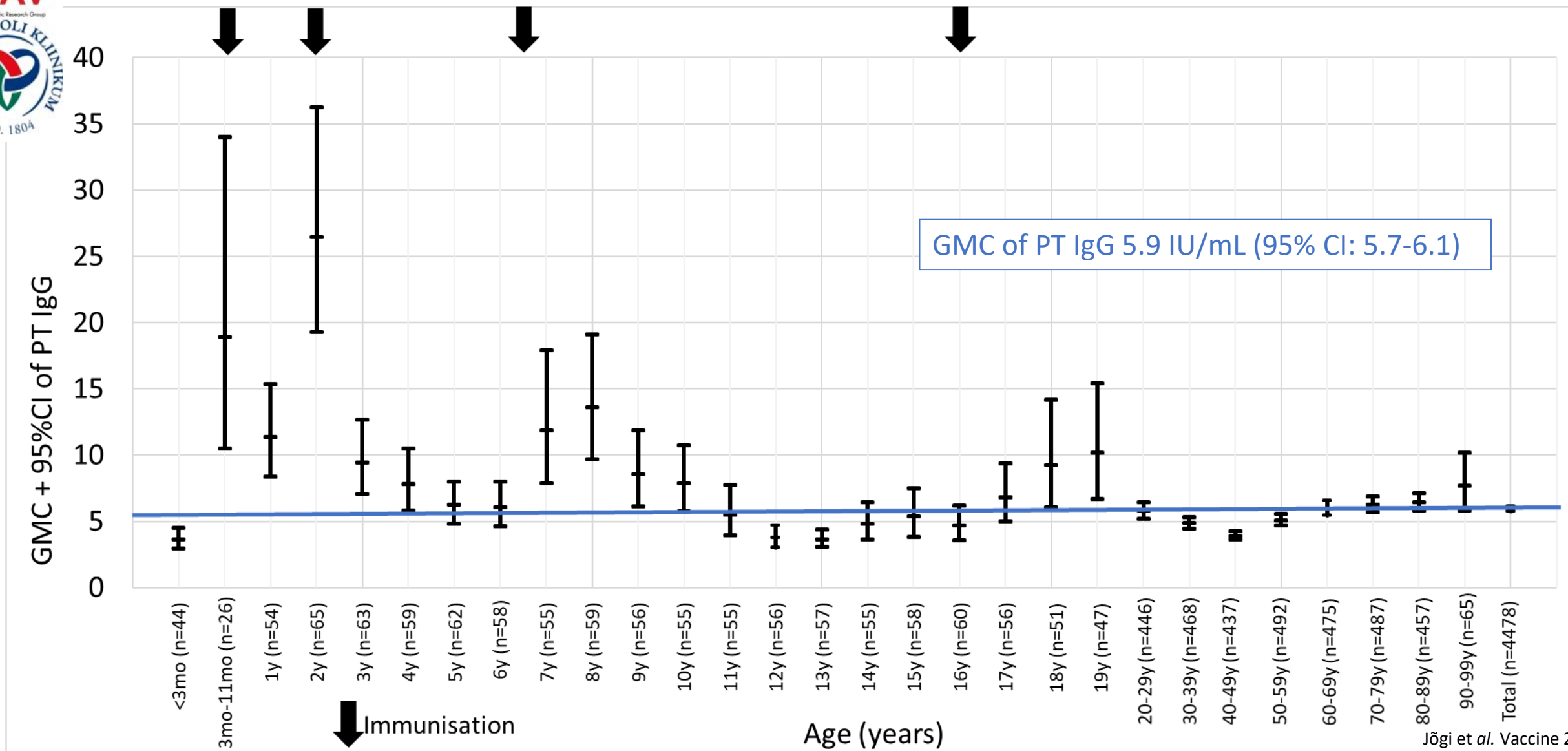
## Disclosure

<input checked="" type="checkbox"/>	No, nothing to disclose
<input type="checkbox"/>	Yes, please specify:

# Pertussis incidence, immunisation rate, changes in immunisation and diagnose strategies in Estonia between 1991 and 2016

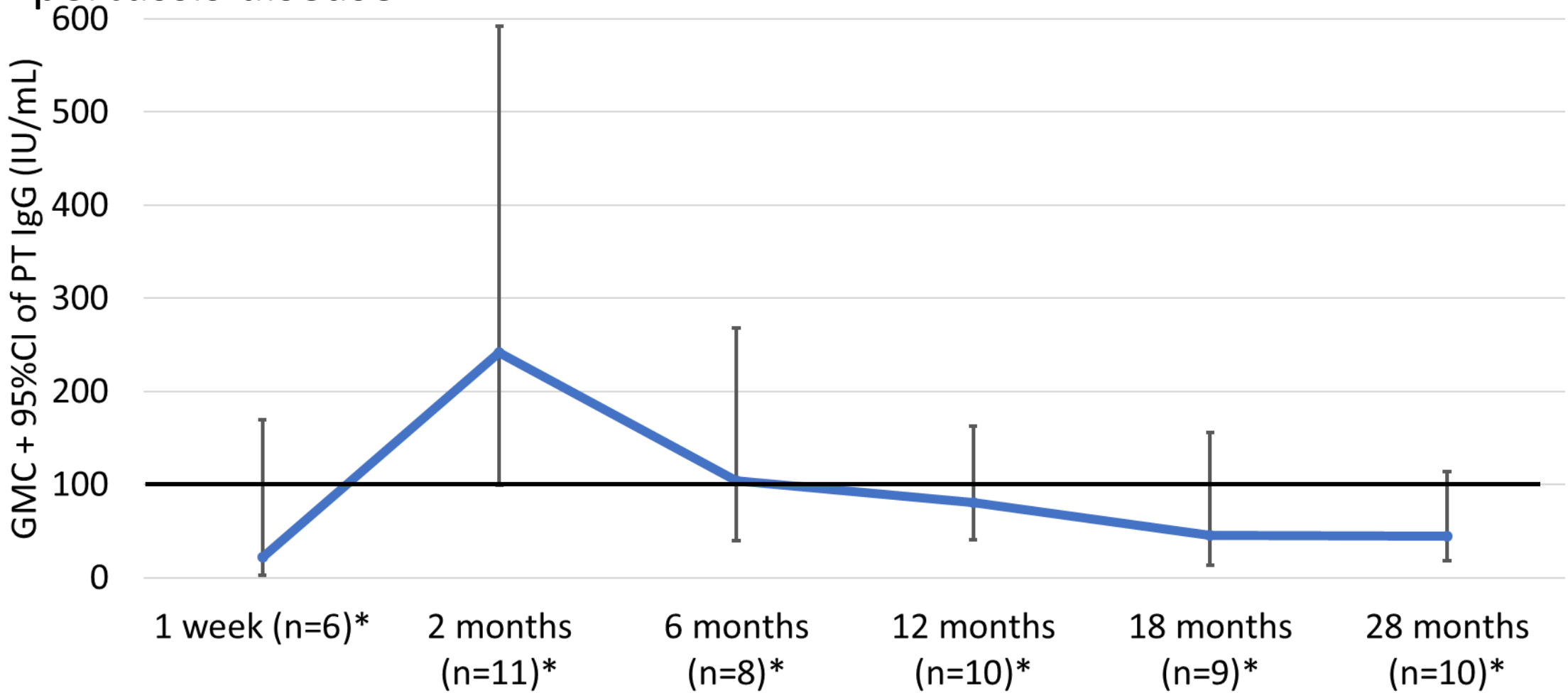


# The age distribution of PT IgG GMC (N= 4478)



# Previous studies...

- Few studies which describe the GMC of PT IgG during and after pertussis disease



\*time since onset of illness



**ELAV**  
Estonian Paediatric Research Group



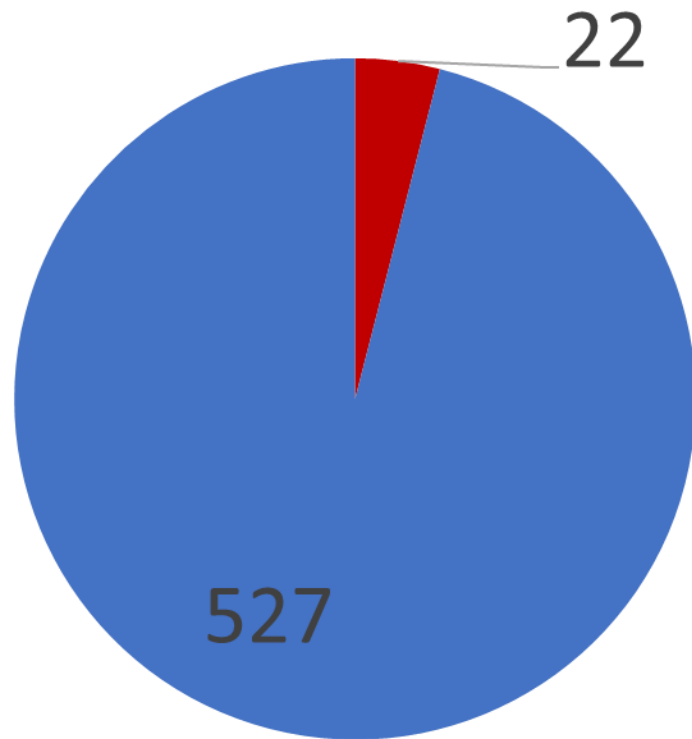
# Aim

- In order to understand for how long and at which level antibodies persist after pertussis disease we aimed to describe the concentration of PT IgG within three years after pertussis

# Methods

- **Type:** Prospective study
- **Enrolment of patients:** 25 GP practices and 3 hospitals in Estonia
- **Time:** 23. April 2012 - 31. December 2014
- **Population:** 0-99years patients with cough of unknown aetiology lasting for  $\geq 7$ days
- **Diagnosing criteria of pertussis:**
  - pos. culture and/or
  - pos. PCR and/or
  - PT IgG  $>100$  IU/mL or PT IgG 40-100 IU/mL and PT IgA  $\geq 12$  IU/mL
- **Monitoring of patients with pertussis:** PT IgG was measured 4-6w, 1y, 2y and 3y after enrolment (if they have not been immunised with pertussis vaccine during the previous 1y)
- **ELISA test:** PT IgG (Euroimmun<sup>®</sup>, Lybeck, Germany)

# Prevalence of pertussis - 4.0%, 95%CI: 2.5-6.0



- Pertussis
- Cough of another/unknown aetiology

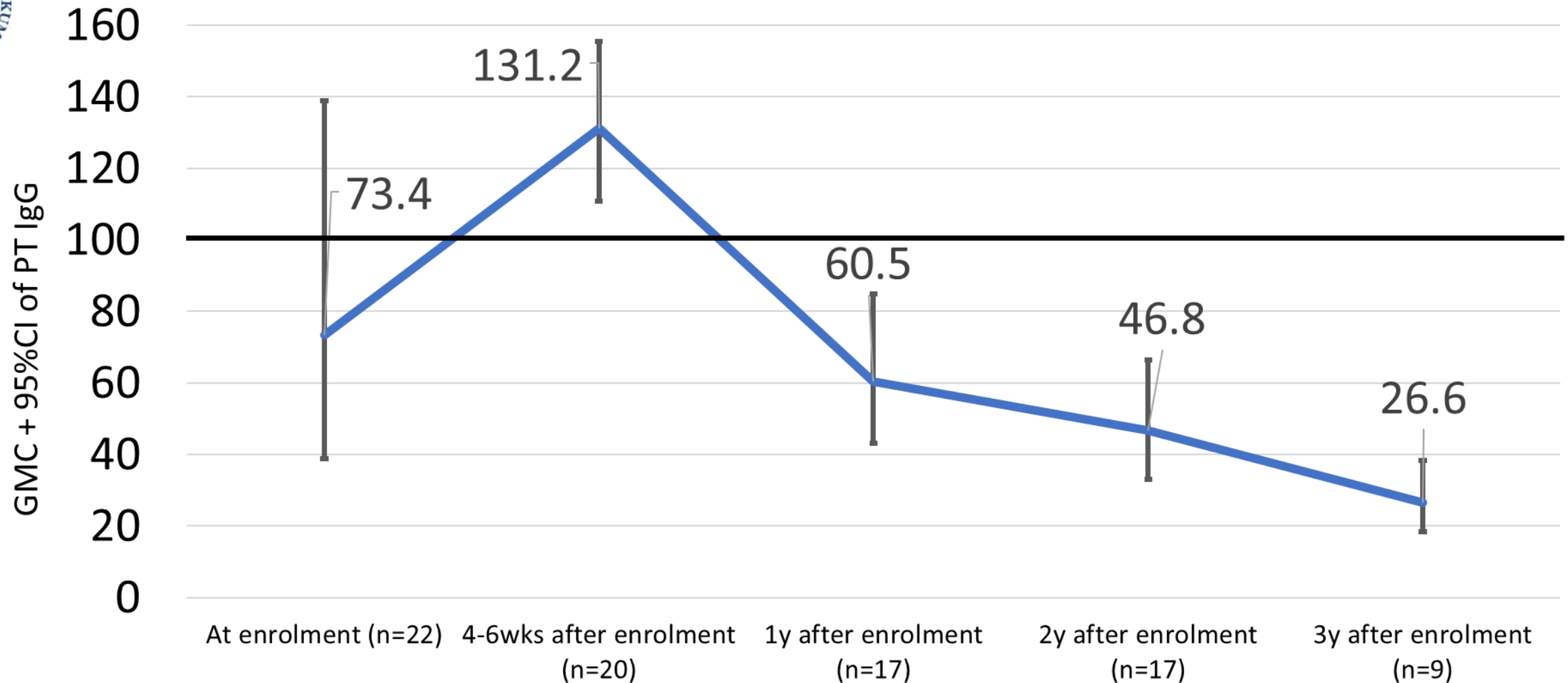
Dignose methods	% (n) of pertussis cases (N=22)
Serology	77 (17)
PCR	18 (4)
Culture + PCR	5 (1)



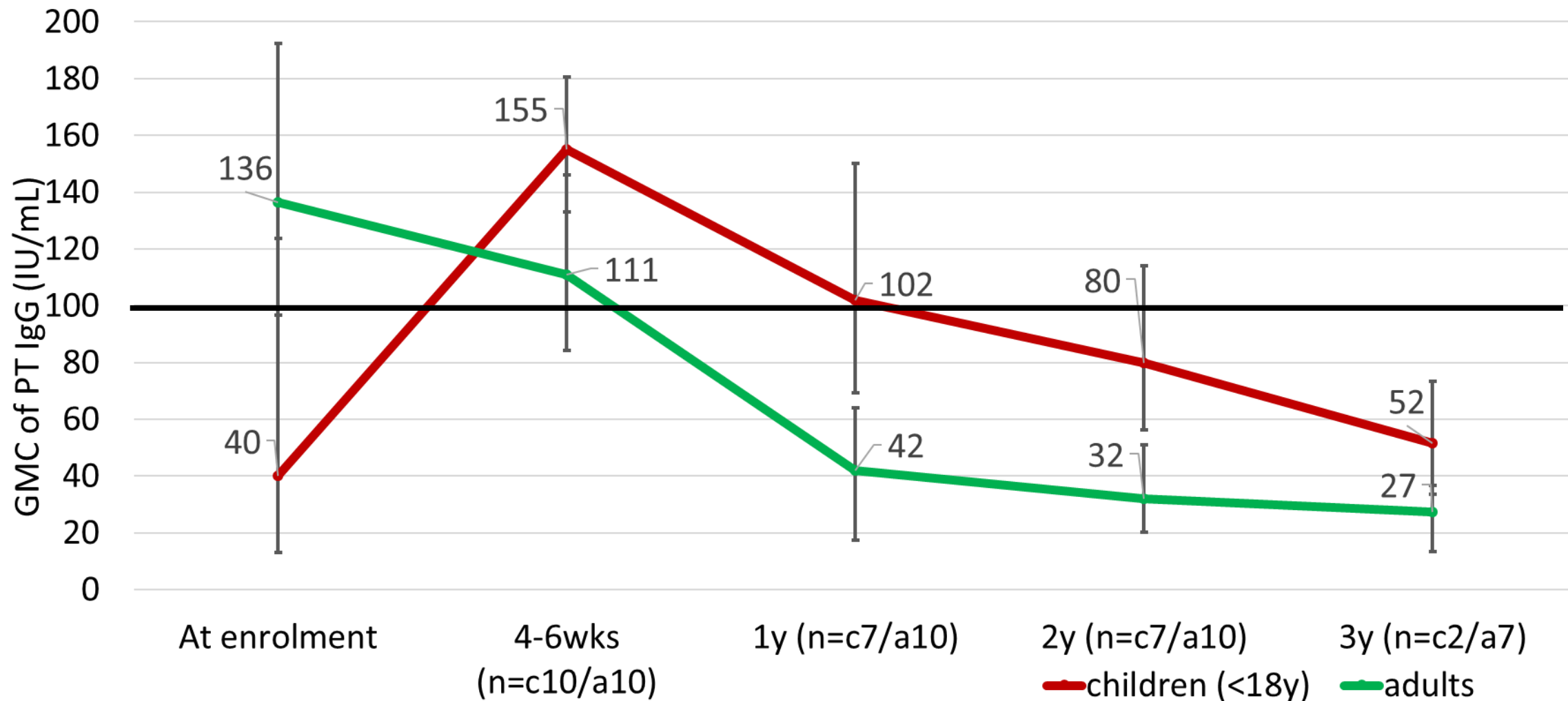
# Characteristics of patients with pertussis

Characteristic	Total (N=22)	Children (<18y) (N=11)	Adults (≥18y) (N=11)
	<b>Mean ±SD</b>		
Age (years)	22 (±17)	7 (±6)	36 (±12)
Duration of cough before enrolment (days)	28 (±20)	26 (±20)	32 (±22)
	<b>Prevalence (%)</b>		
Number of male patients	55	82	27
Clinical characteristics			
-paroxysms	95	91	100
-inspiratory whooping	59	36	82
-posttussive emesis	59	45	82
Immunised with pertussis vaccine during previous 5y	23	55	0
Serologically confirmed	77	64	91

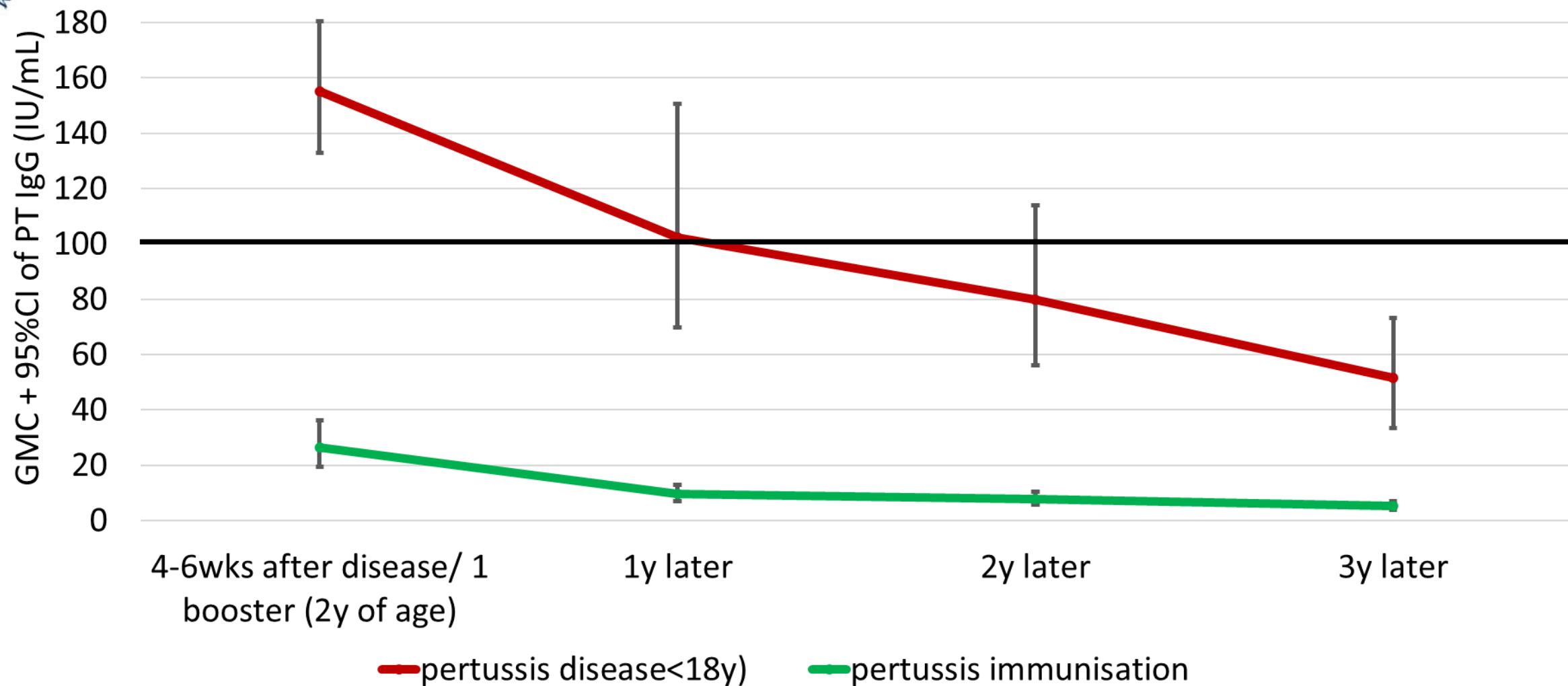
# The GMC of PT IgG in patients with pertussis at the enrolment and during follow-up period



# The GMC of PT IgG in **children** and **adults** at the enrolment and during follow-up period



# The GMC of PT IgG in children with **pertussis disease**, **population GMC** at the time of **1<sup>st</sup> booster** and during follow-up period



# Conclusions

- In this study, where pertussis was mostly diagnosed based on serology, the GMC of PT IgG concentration was higher and antibodies persisted longer in children than in adults
- These data indicate that the diagnostic cut-off point of the PT IgG 100 IU/mL may not be appropriate for Estonian children
- However, the number of patients in this study was too small to calculate new diagnostic cut-off value
- Within 3 years after pertussis the GMC of PT IgG was significantly higher than population GMC 3 years following immunisation

# Pertussis study group of Estonia

- Prof Irja Lutsar
- Dots Marje Oona
- Dr Piia Jõgi
- Tanel Kaart
- Merit Pauskar
- Karolin Toompere
- Dr Sirje Leedo
- Jevgenia Epštein
- Kai Lauri
- Kaie Otsmaa
- Dr Krista Lõivukene
- Kristi Huik
- Dr Eda Tamm
- Karin Laasik
- Aivi Themas
- Kristjan Adojaan
- GP Tereza Maskina
- University Family Doctors' Centre
- Merekiivi Family Doctors' Centre
- Lembi Põlder Family Doctors' Centre
- GP Ilme Last
- GP Ülle Trumm
- Tabasalu Family Doctors' Centre
- GP Tiiu Tootsi
- Türi Health Centre
- Vee Family Doctors' Centre
- Pirtia-Kose Family Doctors' Centre
- Medicum
- GP Hiie Karelson
- Linnamõisa Family Doctors' Centre
- Saku Health Centre
- Ädala Family Doctors' Centre
- GP Tarvo Kiudma
- Eve Mõistuse Family Doctors' Centre
- GP Mairi Kotsar
- GP Helvi Kansi
- Plaks ja Pilv Family Doctors' Centre
- GP Aune Rehema
- GP Ljudmila Jakobson
- GP Sirje Saar
- GP Marje Koha
- Children's Clinic of Tartu University Hospital
  - Department of the Acute Infections
  - Department of the Centre of Allergic Diseases of Children and Adolescents
- Anaesthesiology and Intensive Care Clinic of Tartu University Hospital Children's Intensive Care Department
- Tallinn Children's Hospital
- Järvamaa District Hospital
- Quattromed HTI Laborid OÜ/Synlab OÜ
- United Laboratories of Tartu University Hospital
- Laboratory of Communicable Diseases of Health Board
- 5D Vision

