Respi Viruses & Children

How many, how much ?

Hans De Beenhouwer

Introduction

- Acute respiratory tract infection (RTI) are responsable for 75% of all consults for acute complaints in the world
- Every child of < 7 y has 3 to 8 times/year an acute upper respiratory infection (URTI).
- In USA children < 2 y: between 12 to 32 $.10^9$ episodes/y
- URTI are linked to asthmatic attacks, otitis media, lower respiratory infections (LRTI), …

Clinical

Spectrum of clinical pictures going from common cold (rhinorrhea) to life threatening pneumonia

- ✓ Role environment, socio-economic …
- ✓ Role individu (underlying diseases …)
- ✓ Role of the infecting agent

Respi Viruses & Children

How many, how much ?

Etiology : how many ?

- number of ‘agents' is growing fast
- Huge amount of viruses which have been implicated in RTI (in children) !
- "Old" chaps
- "New" chaps

Etiology : how many ?

"Old Chaps"

- Influenza A
- Influenza B
- RSV
- Parainfluenza 1-3
- Adenovirus
- Rhinovirus

"New Chaps"

- hMPV
- Parainfluenza 4
- CoronaV
- BocaV
- ParvoV 4 & 5
- Polyoma KI, WU
- …

Detection, why ?

Better diagnostic tools are important:

➔ patient:

- ✓ correct therapy (influenza)
- ✓ avoid unnecessary antibiotics, unnecessary examinations or hospitalizations
- ✓ correct prognosis ⇒ comforting patients
  ⇒ comforting parents

Why detection ?

➔ doctors:

- Diagnostic reflexes in respiratory infections are underdeveloped, underused because results too slow, sampling problems, sensitivity problems, ...

⇒ no interest in correct diagnosis

⇒ hazy therapeutic policies

- Rapid diagnosis ⇒ Learning curve

⇒ Better care

How to detect ?

A diagnostic test should be:

- ✓ rapid (same day - results)
- ✓ sensitive and specific
- ✓ simple sampling method and transport
- ✓ spectrum as large as possible / necessary

  ⇒ Molecular testing
- ✓ easy
- ✓ cheap !

Large spectrum: Multi - detection

- Detection of Multiple pathogens :
  - ✓Hexaplex +
  - ✓Prodesse (7 viruses)
  - ✓X-Tag (19 viruses)
  - ✓MultiCode-Plx (17 viruses)
  - ✓Respifinder (viruses + bacteria)
  - ✓Res.plex I & II (viruses + bacteria)
  - ✓Multiplex MassTag (viruses + bacteria)
  - ✓Micro arrays
  - ✓…

Bilulu examined !

EMMD
12-14/10/2011

Performance of Respifinder Smart 22 for fast diagnosis of respiratory tract infections

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BILULU

OBJECTIVES

More than 20 viruses have been shown to cause respiratory tract infections. Identification of the etiological agent is useful to provide – or avoid – specific therapy, to take the necessary hospital hygiene measures and for epide
nucleic acid amplification techniques allow broad spectrum dete
(Smart), a multiplex analysis detecting 16 RNA viruses, 2 DNA v

METHODS

Journal of Clinical Virology 52 (2011) 314–316

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Journal of Clinical Virology

journal homepage: www.elsevier.com/locate/jcv

ELSEVIER

Timely diagnosis of respiratory tract infections: Evaluation of the performance of the Respifinder assay compared to the xTAG Respiratory Viral Panel assay

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[a] Clinical Laboratory, Jessa Hospital, Site Virga Jesse, Stadsomvaart 11, B-3500 Hasselt, Belgium
[b] Clinical Laboratory, AZ Sint-Lucas-Volkskliniek, Groenebriel 9000, Gent, Belgium

Why detection ?

Better diagnostic tools are important:

- ➔ Patient: optimal care
  - ✓ correct therapy (influenza)
  - ✓ avoid unnecessary antibiotics, unnecessary examinations or hospitalizations
  - ✓ correct prognosis ⇒ comforting patients/parents
- ➔ Doctors: "learning curve"
- ➔ Hospital: cohorting, infection control

Record Bewerken Weergave Venster Invoer resultaten Help Matrix

S>A S> >S A>S >Gyn CNF AUT ID

A_Mol_Biol_INF 07/12/10 11:25

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2) HMPV_POS-0203			27.34							
3) RSV_cDNA-1810					26.10					
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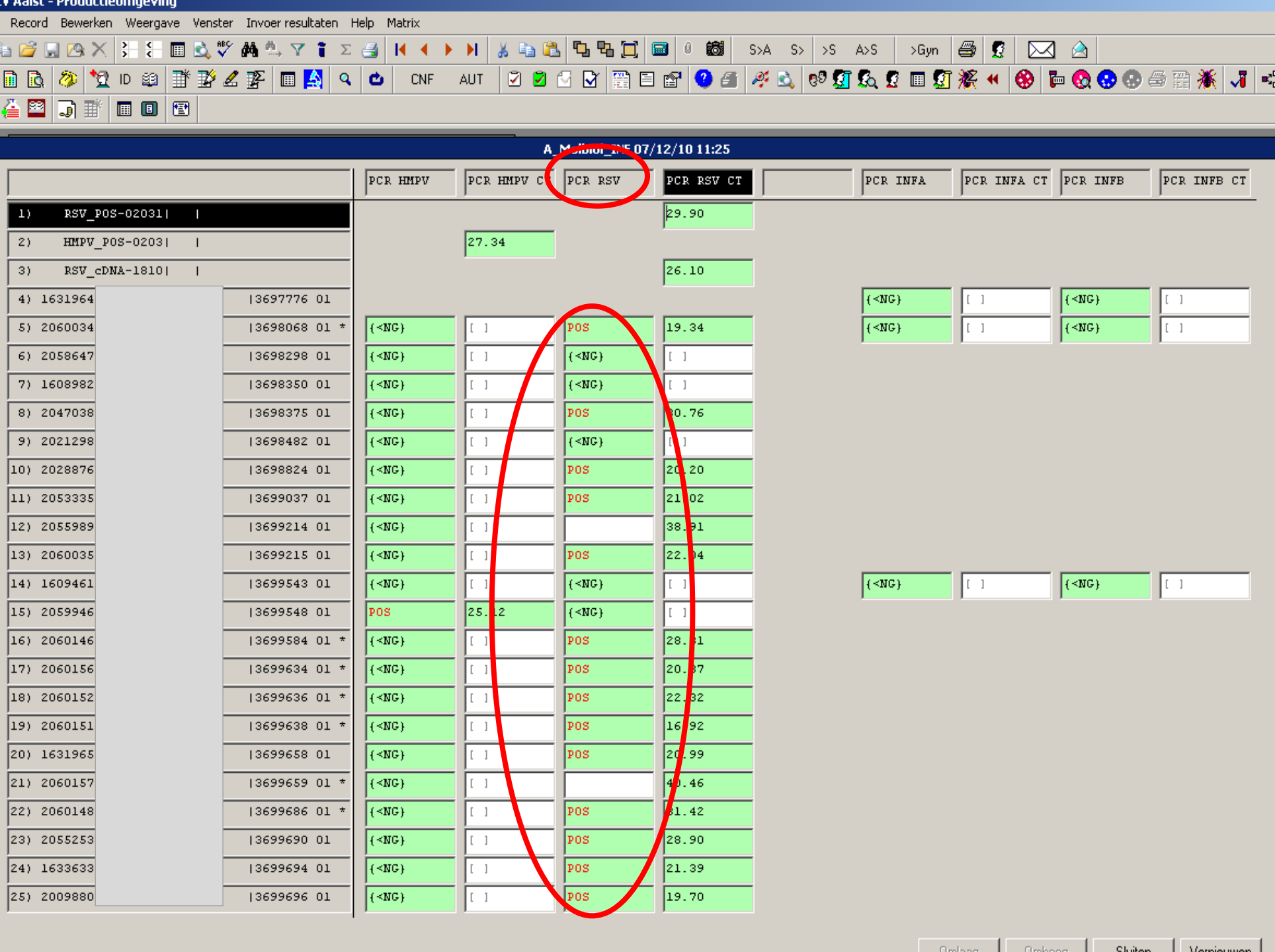
Afdrukken Afdrukken Sluiten Vernieuwen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PCR RSV
PCR RSV CT
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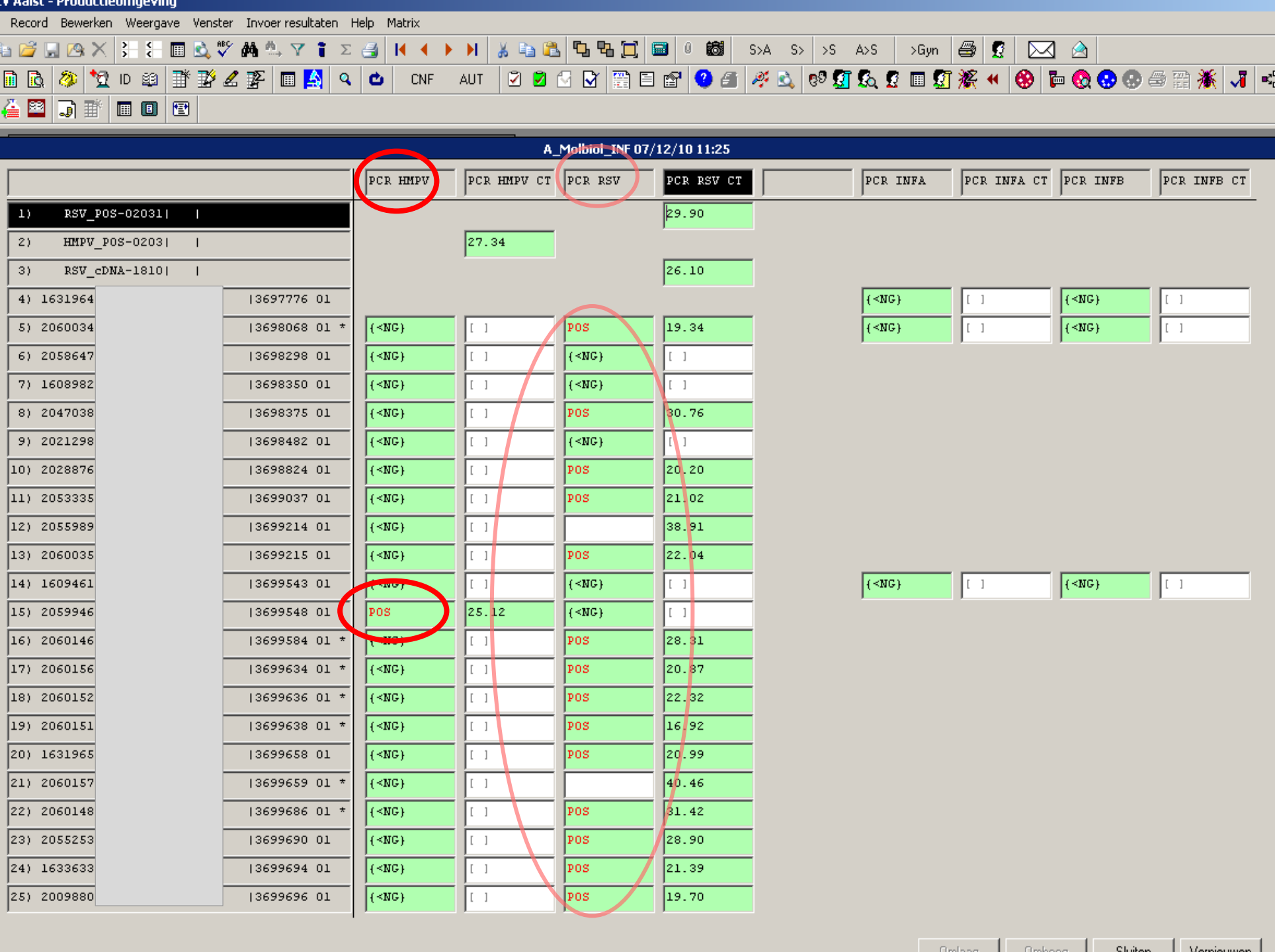
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PCR HMPV CT
PCR RSV
PCR RSV CT
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Why detection ?

Better diagnostic tools are important:

- ➔ Patient: optimal care
- ➔ Doctors: “learning curve”
- ➔ Hospital: cohorting, infection control
- ➔ Government: cost-effectif

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0095-1137/00/$04.00+0

Clinical and Financial Benefits of Rapid Detection of Respiratory Viruses: an Outcomes Study

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Cost-Effectiveness of Rapid Diagnosis of Viral Respiratory Tract Infections in Pediatric Patients

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Departments of Microbiology[1] and Paediatrics,[2] Queen Mary Hospital, University of Hong Kong, Hong Kong

Received 12 December 1996/Returned for modification 7 February 1997/Accepted 5 March 1997

Rapid diagnosis of respiratory viral infections in children resulted in significantly reduced hospital stays, antibiotic use, and laboratory utilization compared with those of a matched group of patients from the previous year who were diagnosed by virus culture. We demonstrate that rapid diagnosis of respiratory infections in children is a cost-effective procedure.

The Cost of Community-managed Viral Respiratory Illnesses in a Cohort of Healthy Preschool-aged Children
Stephen B. Lambert; Kelly M. Allen; Robert C. Carter; Terence M. Nolan

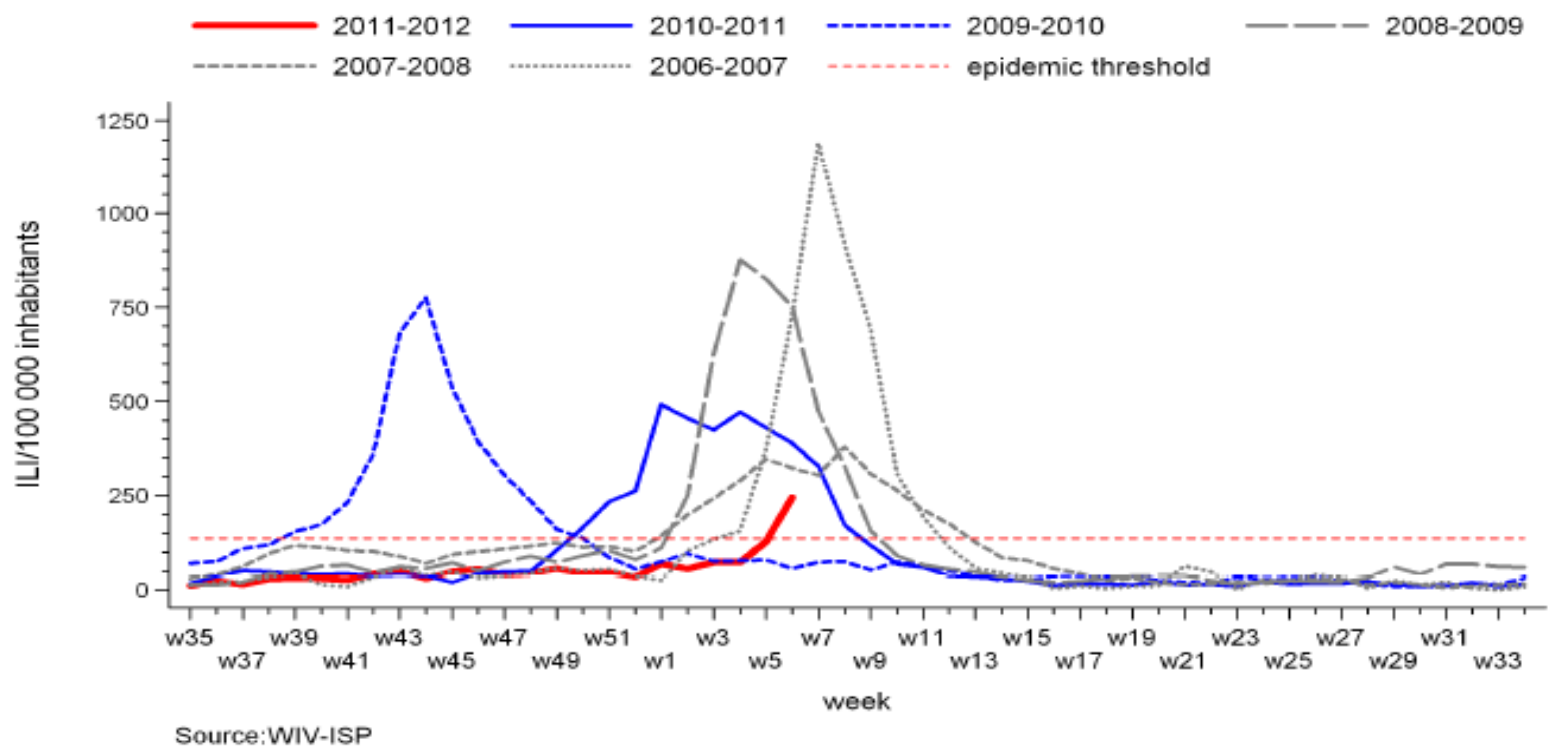
Why detection ?

Better diagnostic tools are important:

- Patient: optimal care
- Doctors: "learning curve"
- Hospital: cohorting, infection control
- Government: cost-effectif
- Public Health: more correct epidemiology

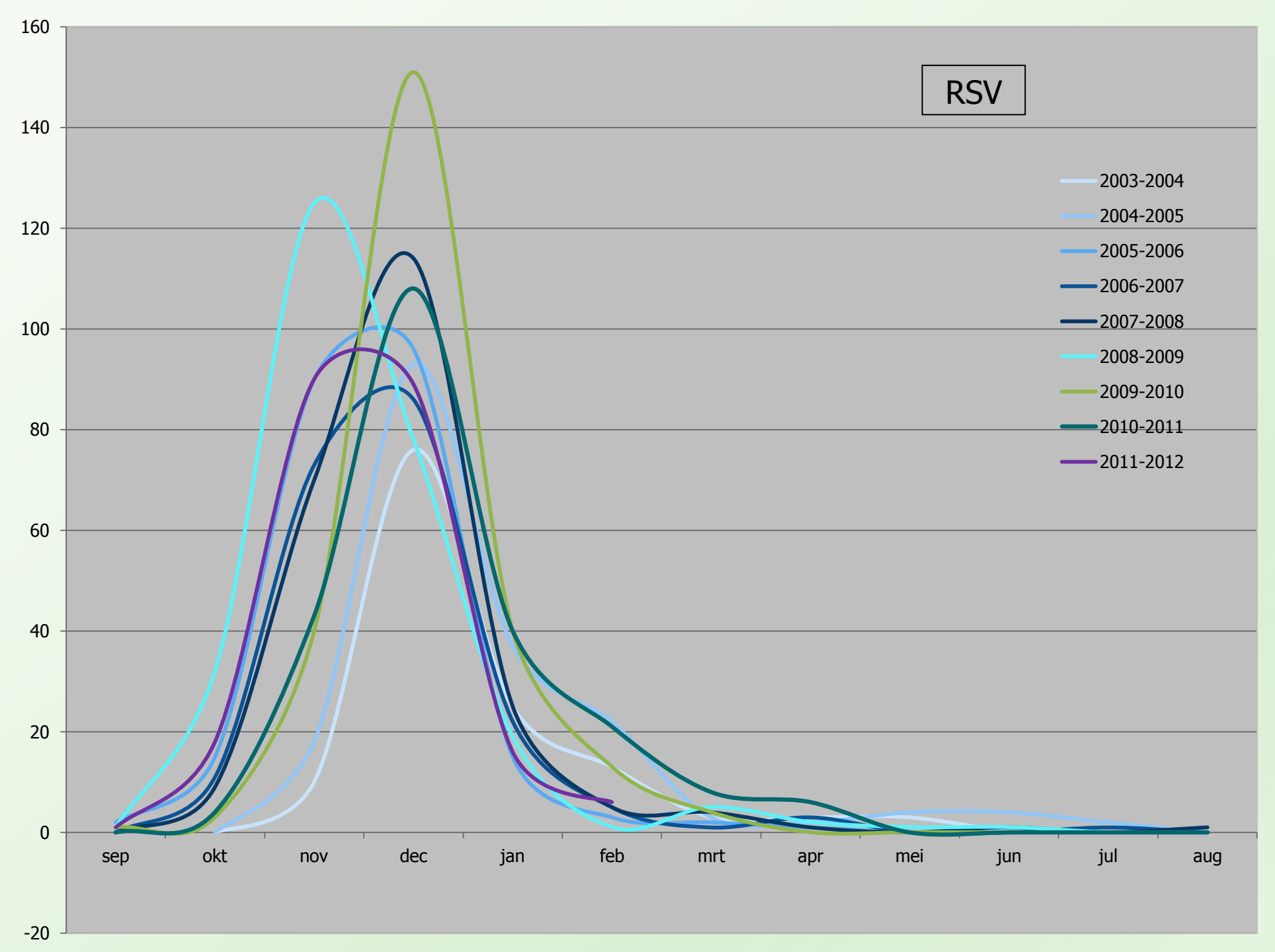
  (epidemics, patterns, new viruses, variants, …)

Epidemio WIV



Epidemio Aalst

- Respiratory pathogen detection started in 2003 : 2 viruses (RSV & hMPV)
- Actually up to 15 viruses/bacteria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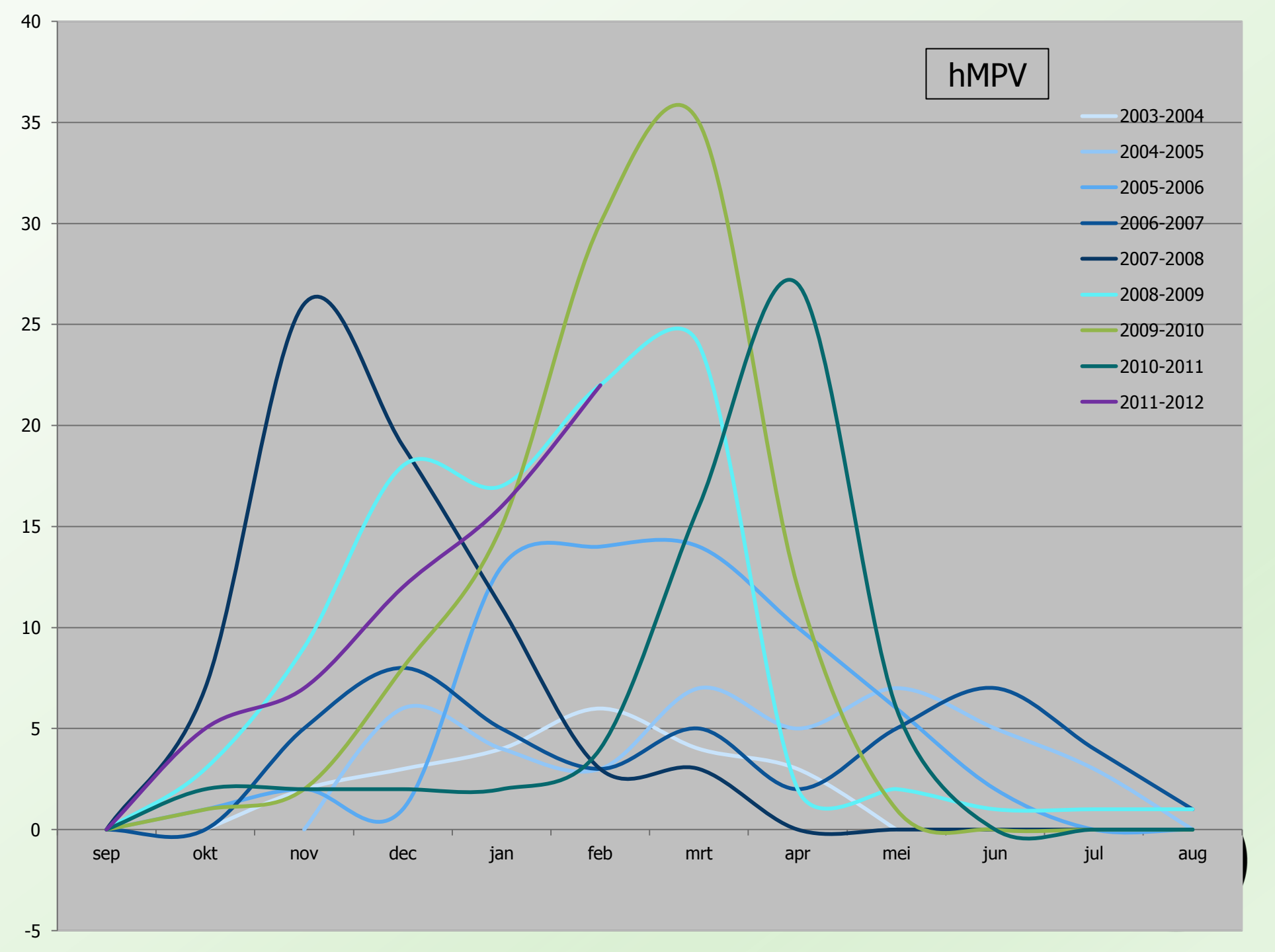
2011-2012


hMPV
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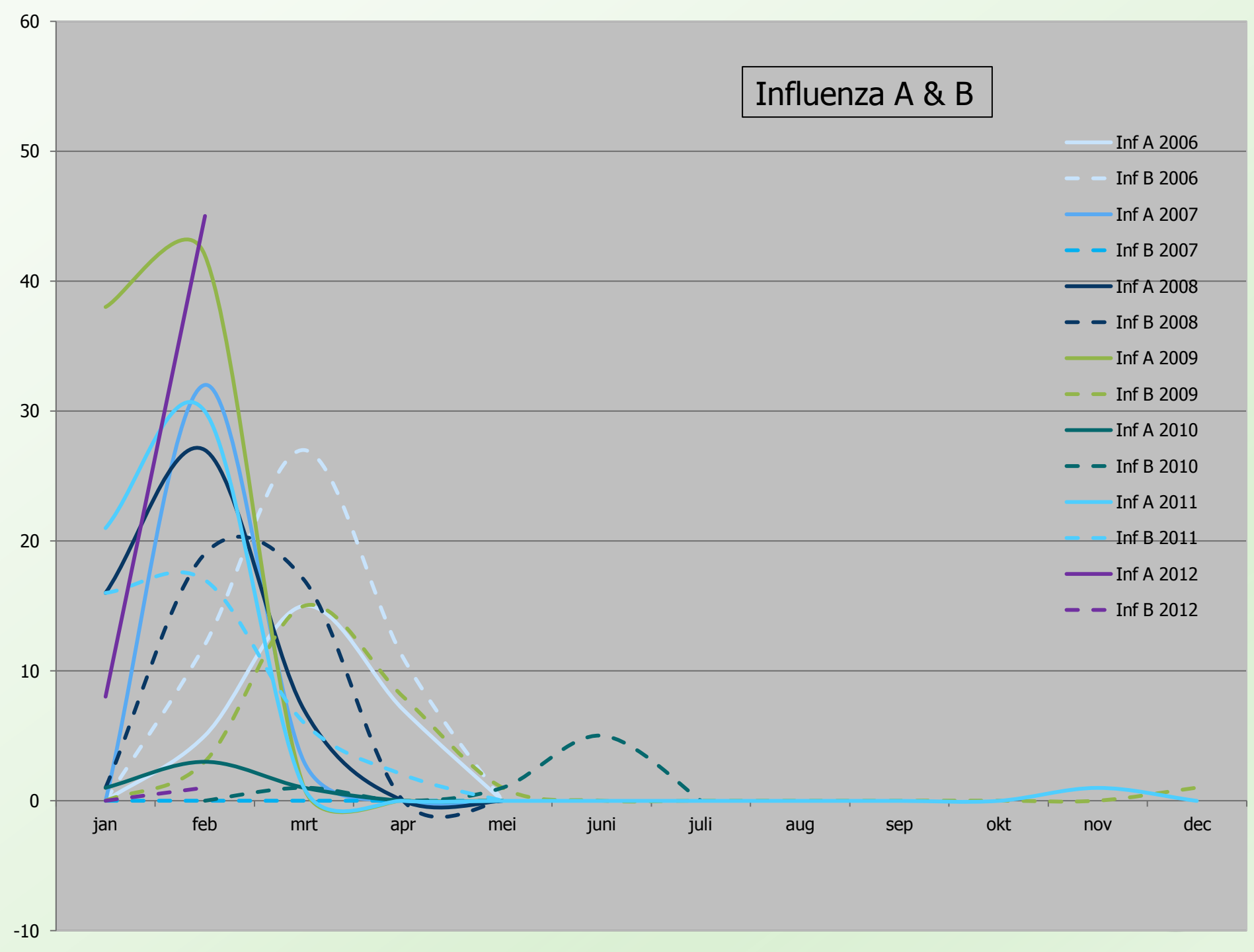
Influenza A & B
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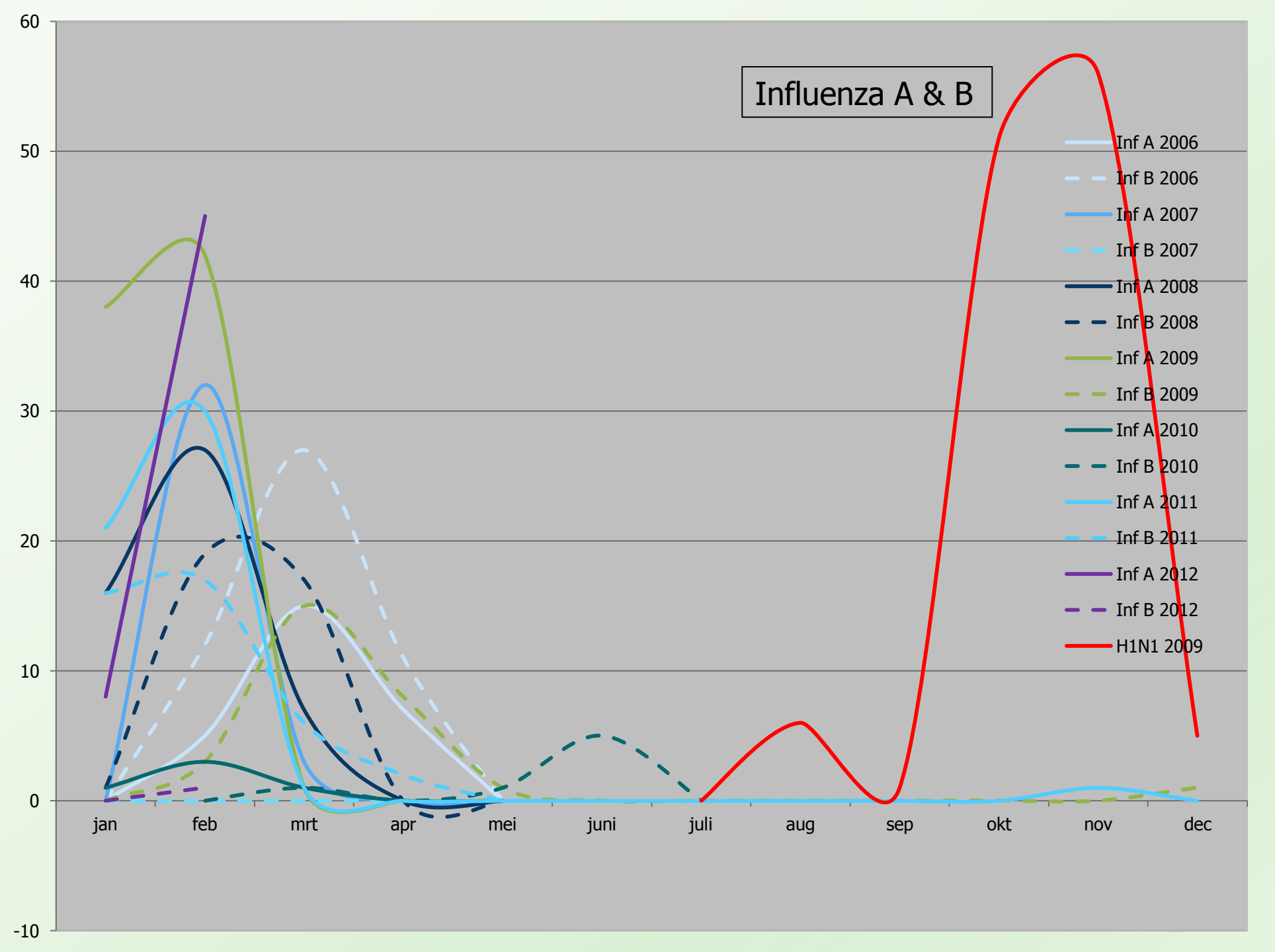
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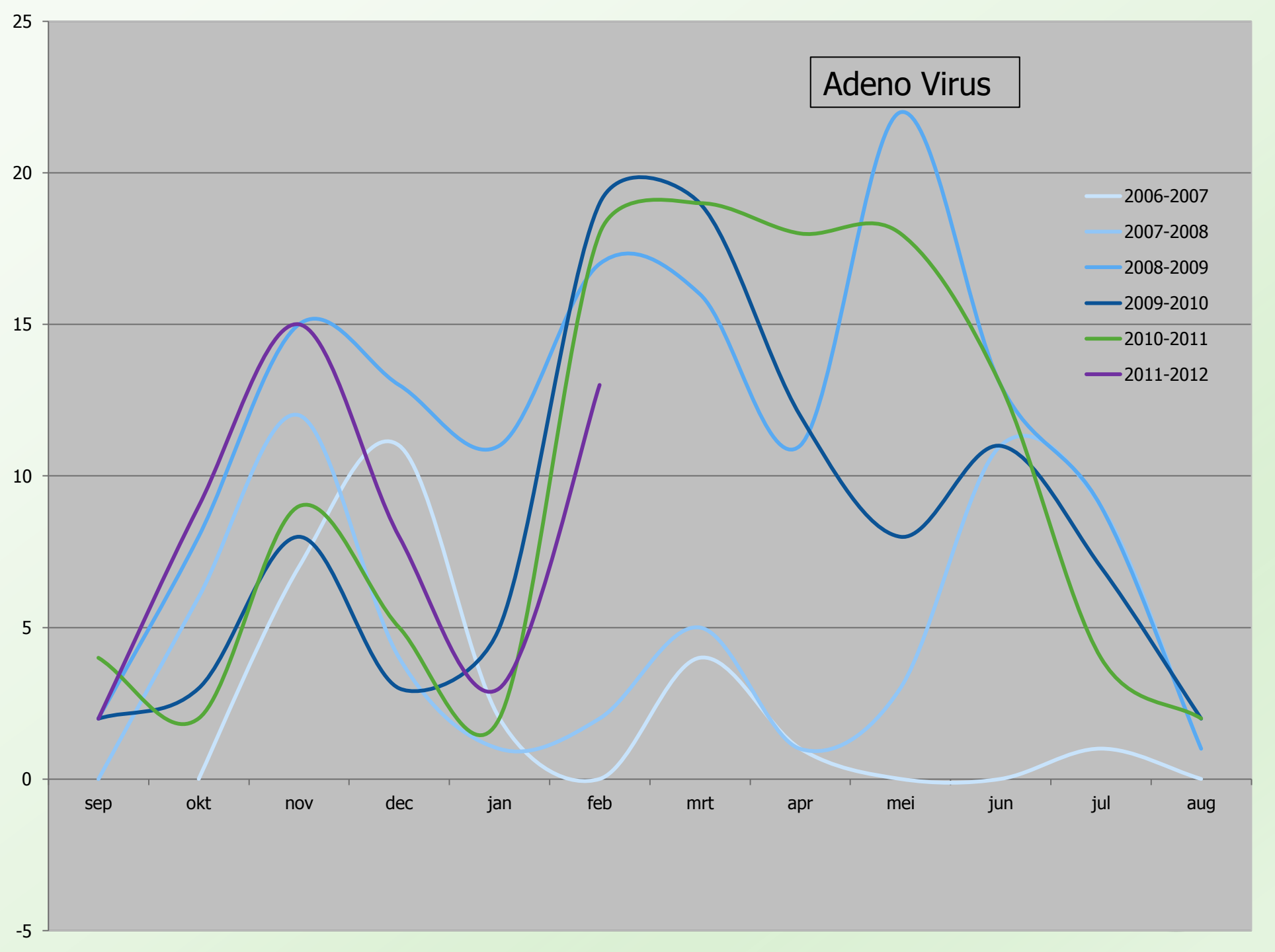
H1N1 2009


Adeno Virus
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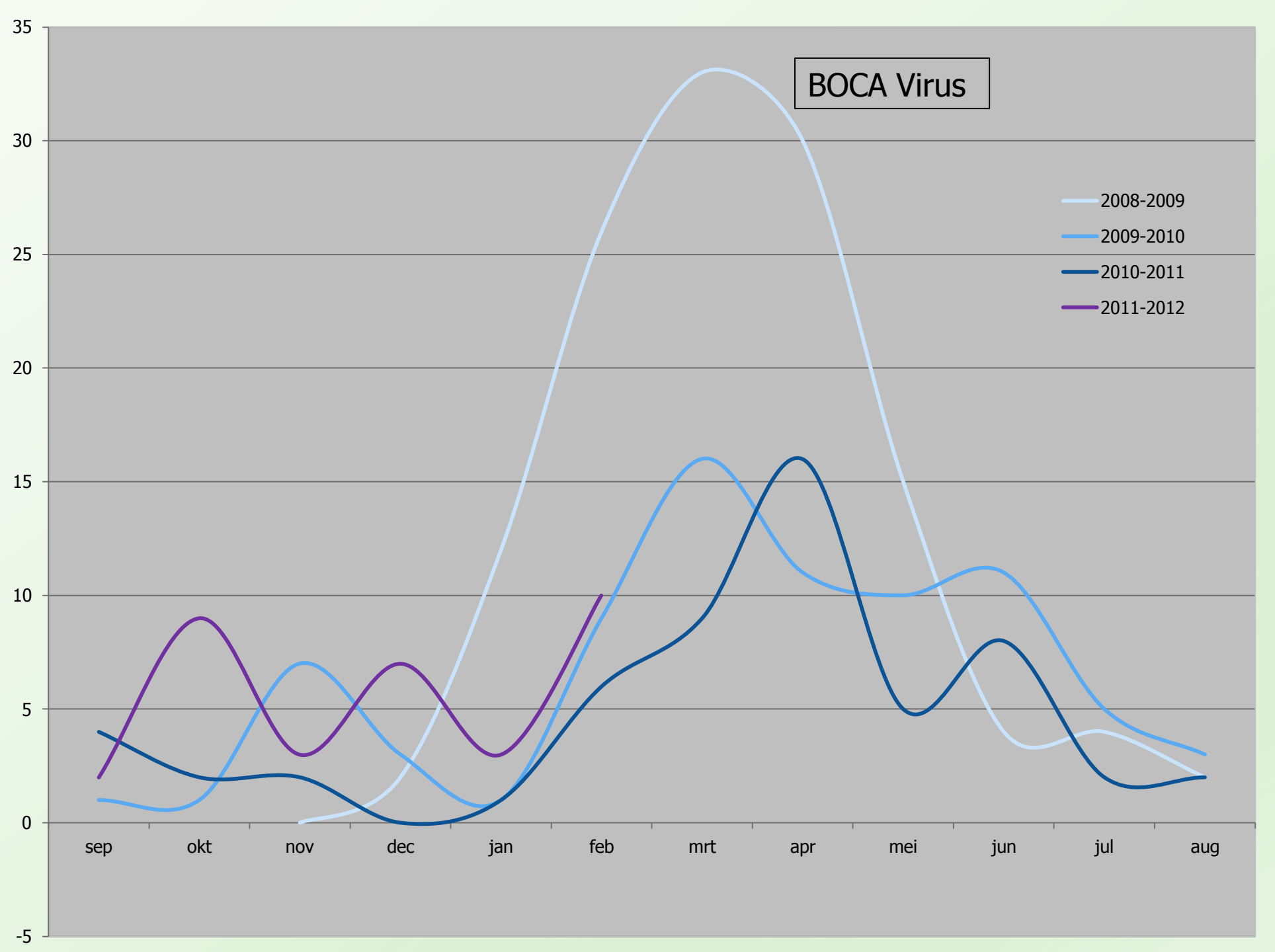
BOCA Virus
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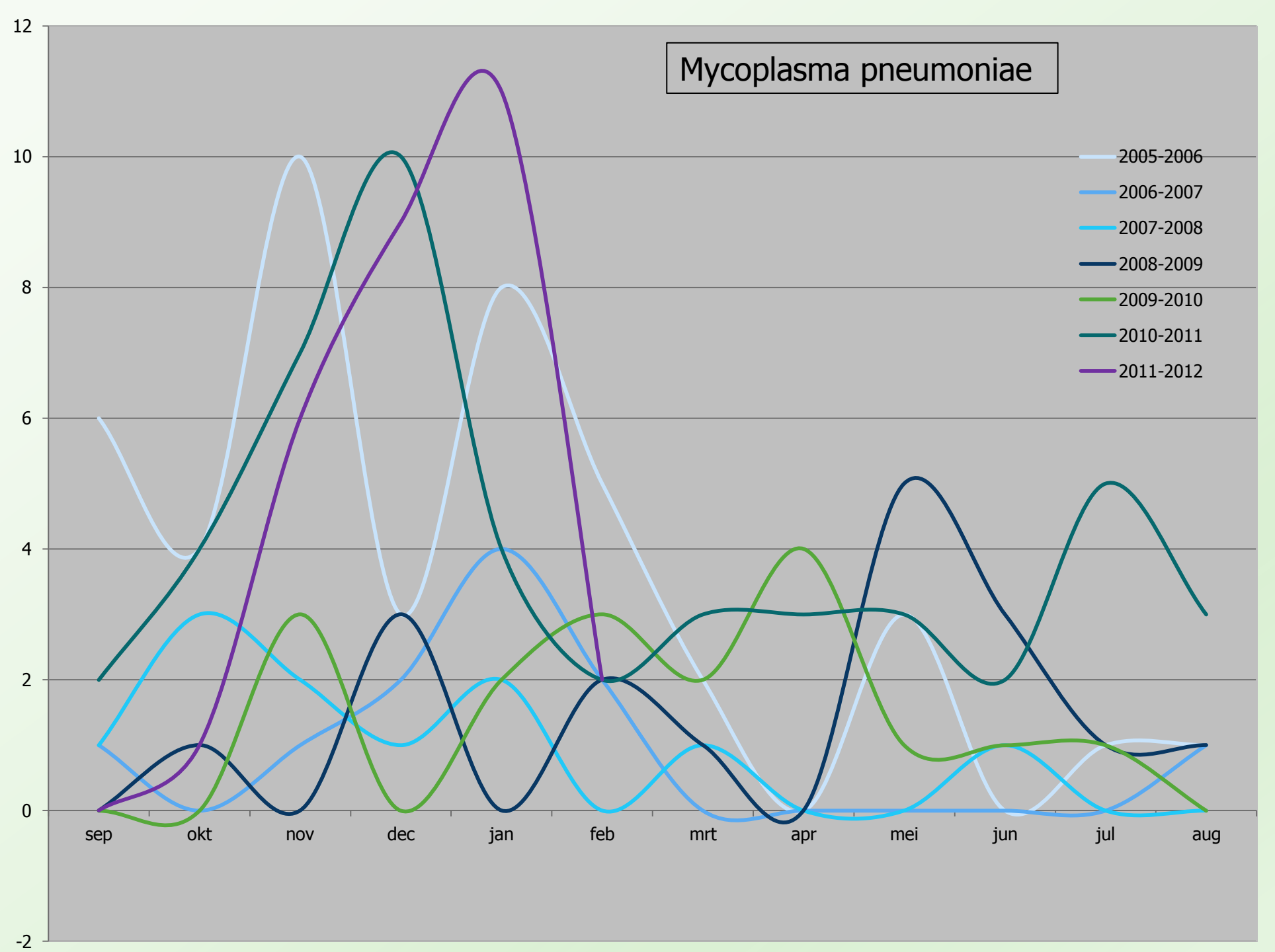
Mycoplasma pneumoniae
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Etiology : how much

detection = infection ?

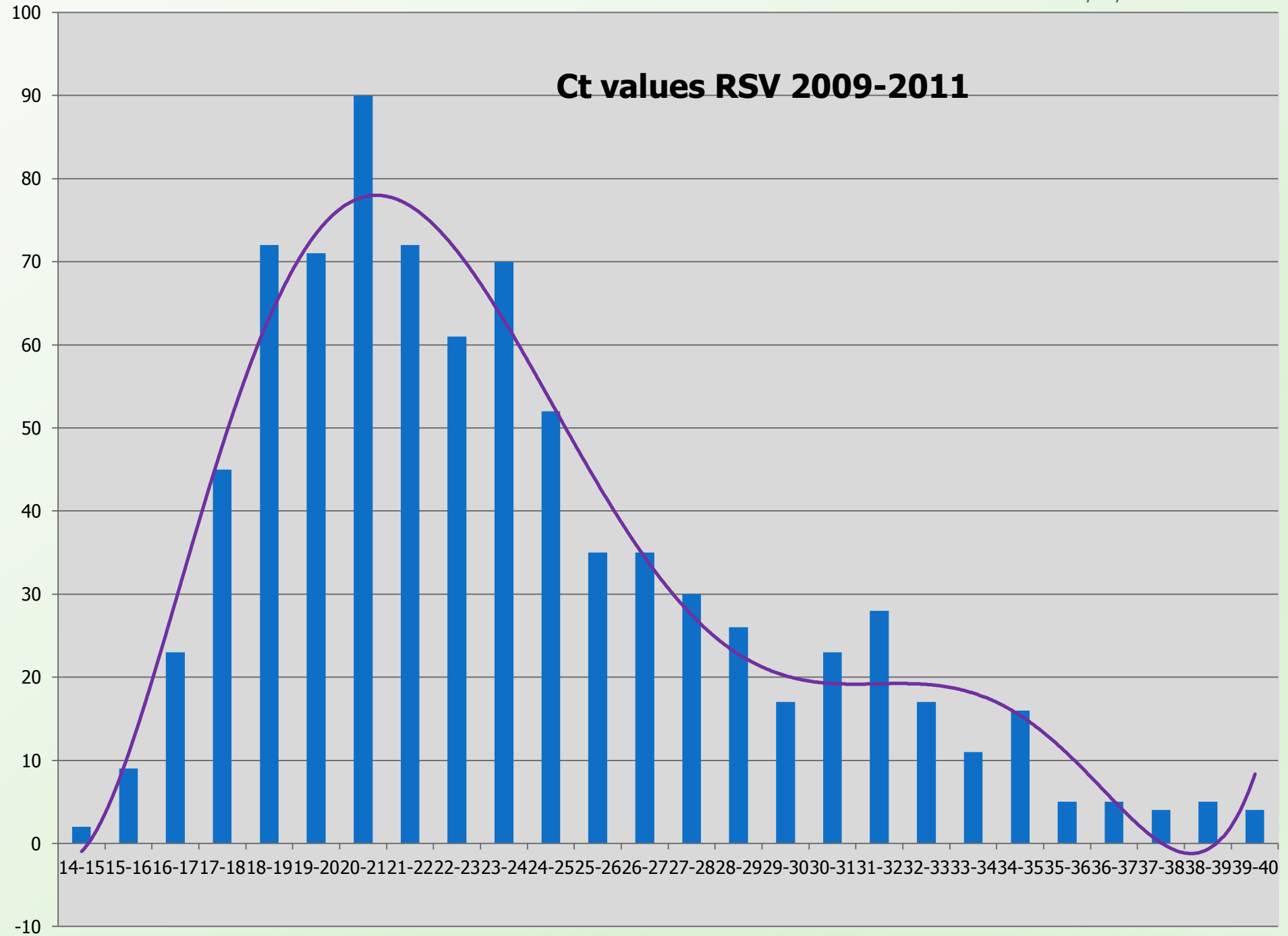
Detection = infection ?

- ✓ is detection of an agent = etiological agent of the present disease ?
- ✓ does viral colonisation exist in the respiratory tract?
- ✓ is persistency important? detectable ?

if yes (in analogy to bacterial infection):

⇒ it is diagnostically important to make the difference !

⇒ how to make the difference ?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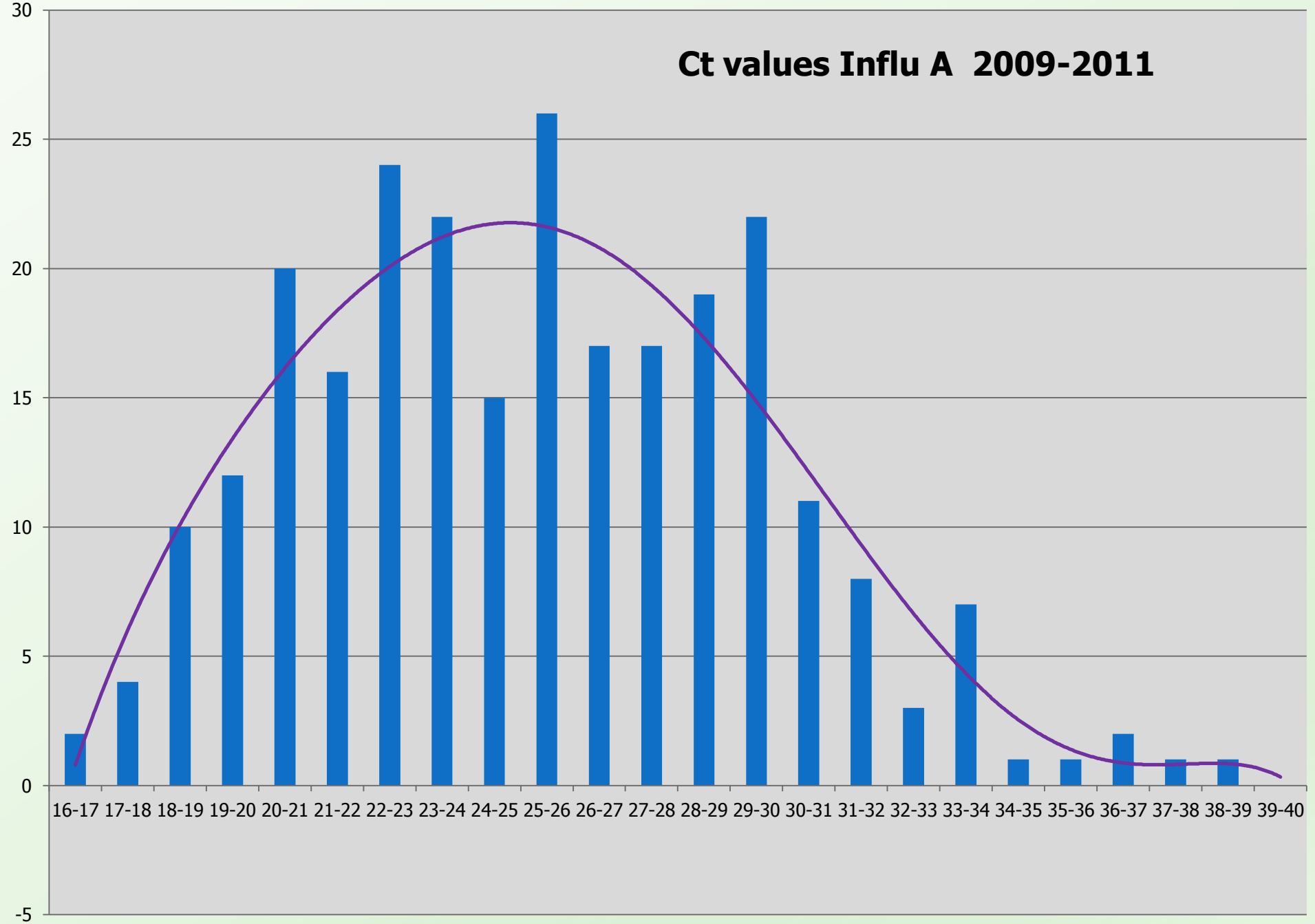
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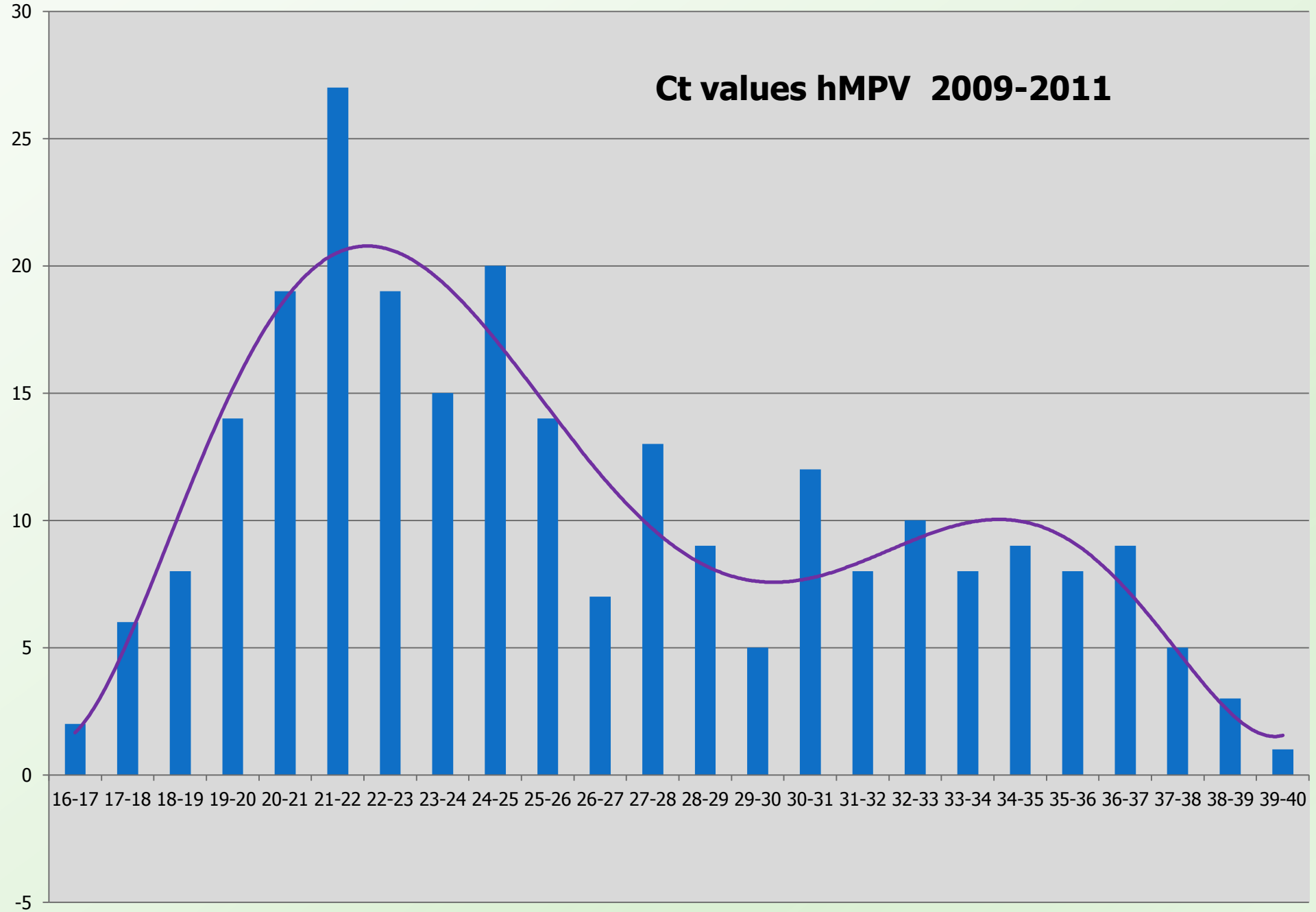
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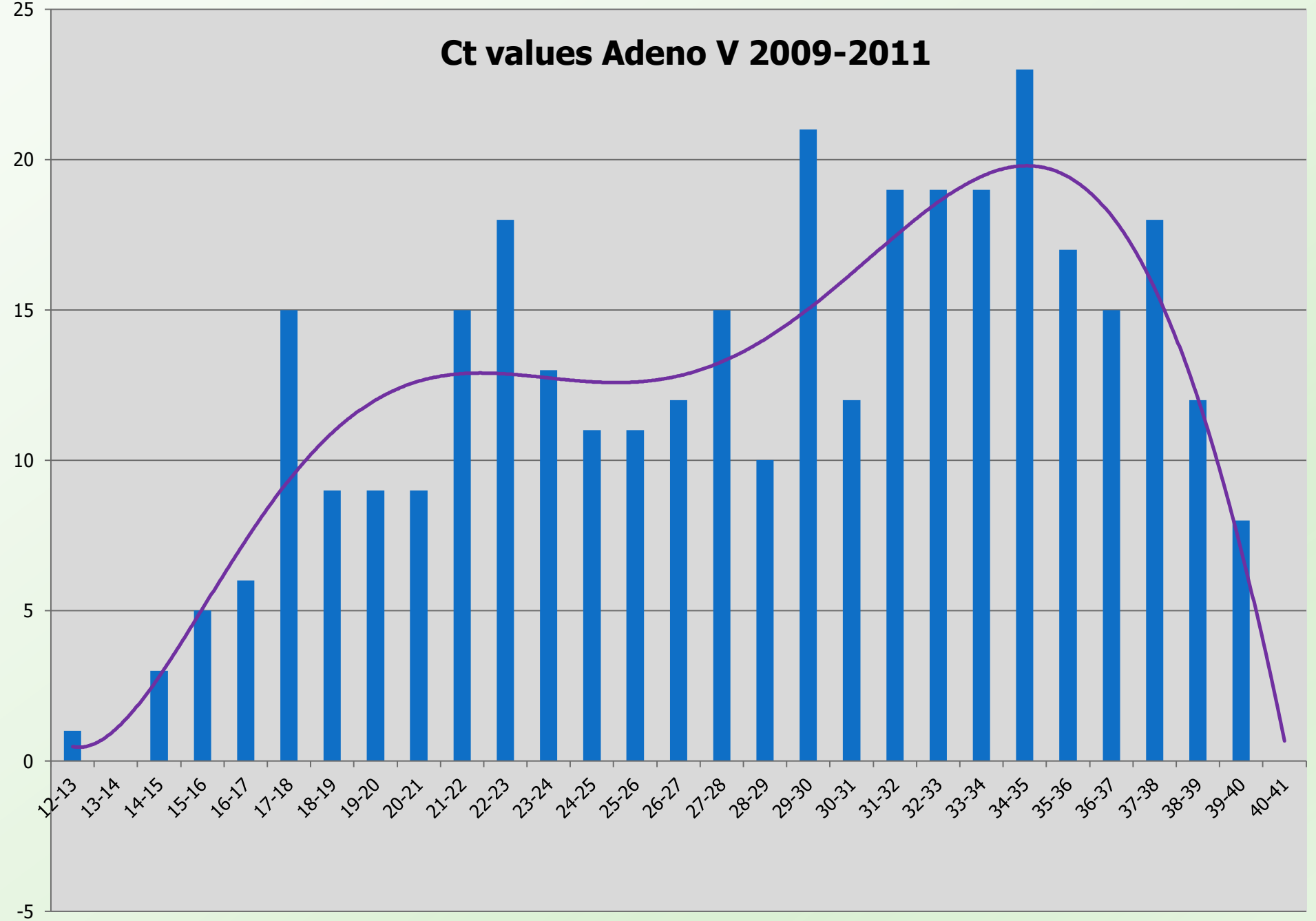
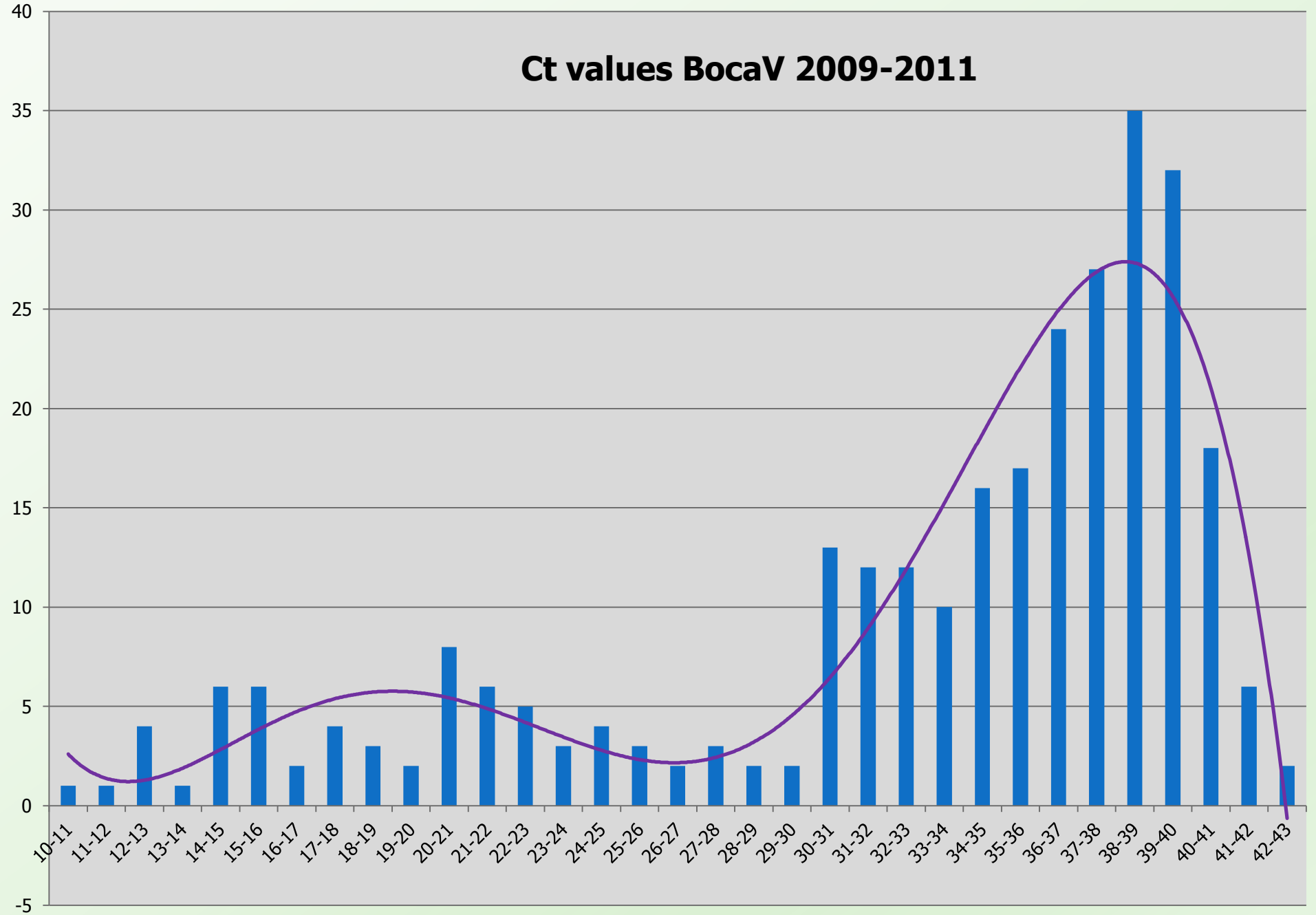
Bilulu 2/03/2012

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40-41
41-42
42-43

Etiology : how much

detection ≠ infection ?

To be continued !
Come and see next time !

Thanks to

- ✓Molbiol team (Magda, Elfi, Inge, Astrid, Freya, Karen)
- ✓Anne Vankeerberghen (data !)
- ✓An Boel, Kristien Van Vaerenbergh