

WIV-ISP:

Diagnose en surveillance van infectieziekten

Diagnostic et surveillance des maladies infectieuses

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# National Reference Centre for *Bordetella pertussis*: annual report 2016



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# NRC structure

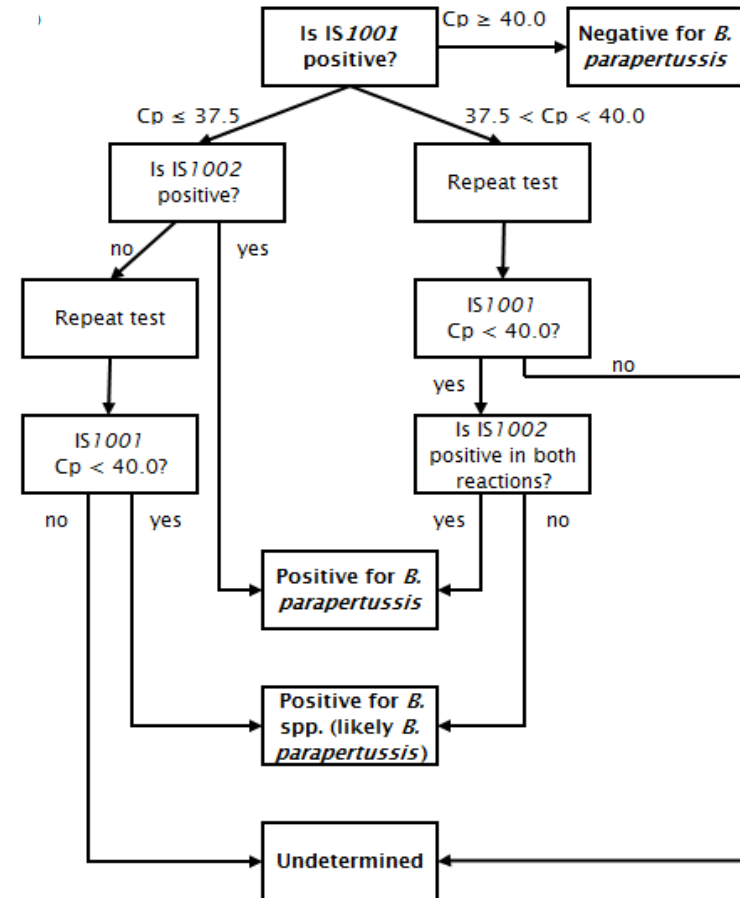
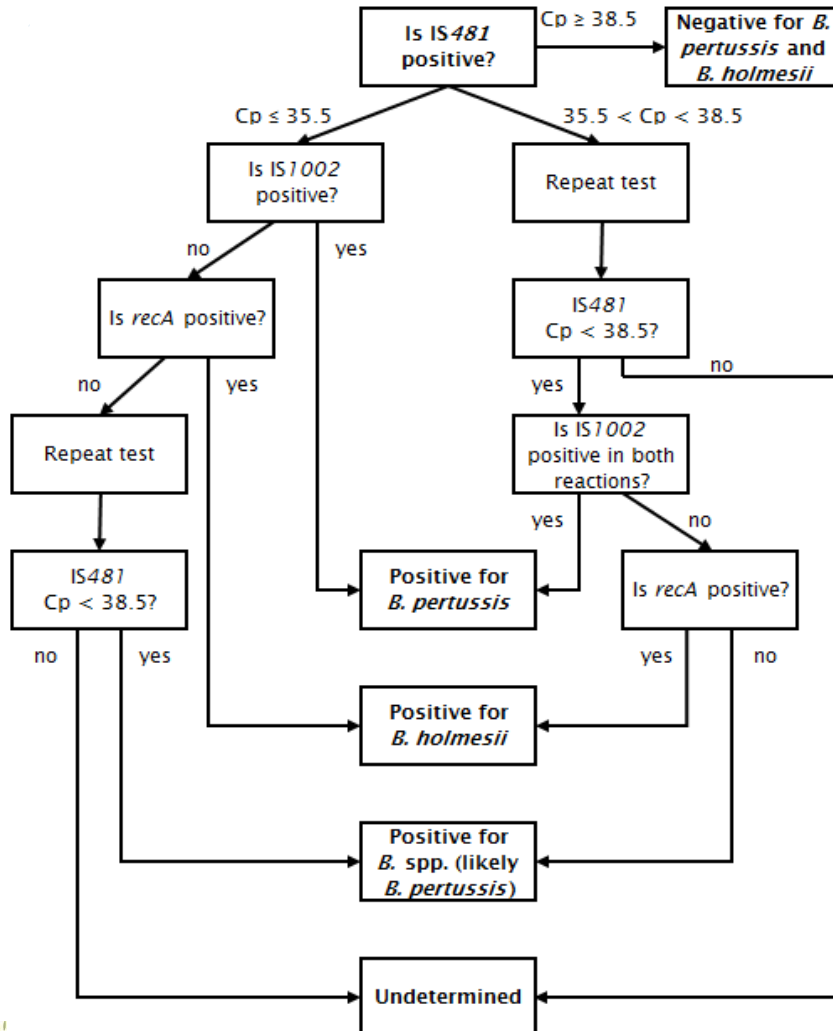
## Surveillance of pertussis(-like disease) ⇐

- *B. pertussis*
- *B. parapertussis*
- *B. holmesii*
  
- UZ Brussel: resp. samples
  - qPCR
  - culture (strain typing)
- WIV-ISP: serodiagnosis (anti-PT IgG ELISA)

# Real-time PCR

- **IS481**  
screening *B. pertussis/B. holmesii*
- **IS1001**  
screening *B. parapertussis*
- **recA**  
confirmation *B. holmesii*
- **IS1002**  
confirmation *B. pertussis/B. parapertussis*

# Real-time PCR



# Results 2016

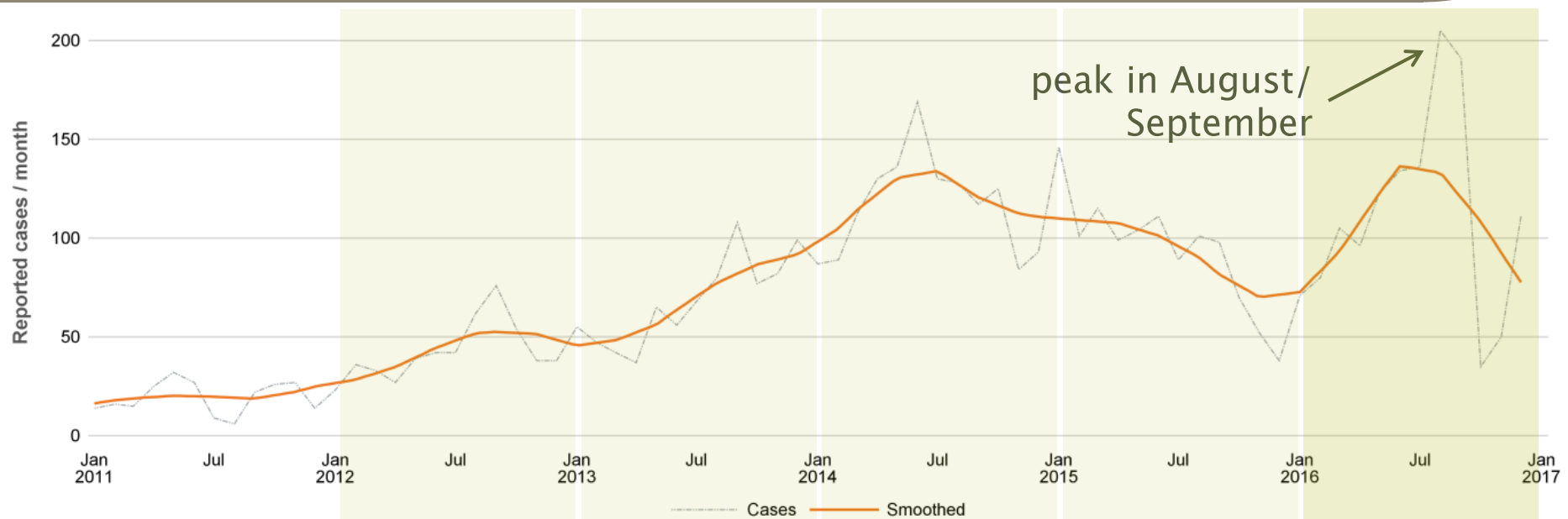
- qPCR:

- 3944 tests for 3835 patients
- 439 *B. pertussis* (11,1%)
- 48 *B. parapertussis* (1,2%)  
→ 2 co-infections with *B. pertussis*
- 5 *B. holmesii* (0,1%)  
→ 1 co-infection with *B. pertussis*

- Serology:

- 5457 tests
- 937 recent *B. pertussis* infection (17,2%)  
(> 125 IU/ml)

# Evolution



PCR	2096	3048	4733	4096	3944
PCR+	204	340	463	392	439
	9,7%	11,2%	9,8%	9,6%	11,1%
serology	1297	2179	4674	4877	5457
serology+	311	526	995	844	937
	24,0%	24,1%	21,3%	17,3%	17,2%

# Culture

- Not sensitive enough for diagnostic purposes, but necessary for typing
- 2016: 118 *B. pertussis*

	C <sub>p</sub> (IS481)	Positive PCR	Positive culture	Recovery
"Positive for <i>B. pertussis</i> "	C <sub>p</sub> ≤ 20	62	46	74%
	20 < C <sub>p</sub> ≤ 25	50	25	50%
	25 < C <sub>p</sub> ≤ 30	82	35	43%
	C <sub>p</sub> > 30	125	12	10%
		319	118	37%
"Positive for <i>B. spp.</i> (likely <i>B. pertussis</i> )"	C <sub>p</sub> ≤ 30	0		
	C <sub>p</sub> > 30	120	0	0%
		120	0	0%
		439	118	27%

# Strain typing

- *ptxS1* = *ptxA*
  - 118/118 type A
- *ptxS3* = *ptxC*
  - 116/118 type B
- *tcfA*
  - 116/117 type 2
- *prn*
  - 100/115 type 2
  - 14 *prn*-!
- *ptxP*
  - 117/117 type 3
- Erythromycin susceptibility
  - no resistance
- Trimethoprim/sulfamethoxazole susceptibility
  - no resistance



# Conclusions

- Increase in the total number of confirmed *B. pertussis* cases: 1293 in 2016 compared to 1185 in 2015.
- *B. pertussis* continues to circulate!
  - waning immunity
  - vaccine inefficiency (aP vs. wP, changes in virulence expression)
  - diagnosis↑
- No resistance against erythromycin or trimethoprim/sulfamethoxazole.