

Upper respiratory tract infections among febrile patients attending primary care in Southeast Asia

Thomas Althaus

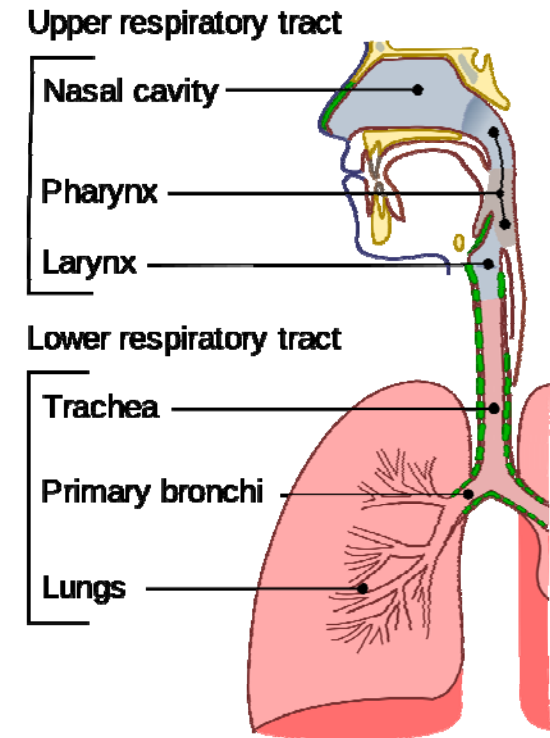
JITMM 2018

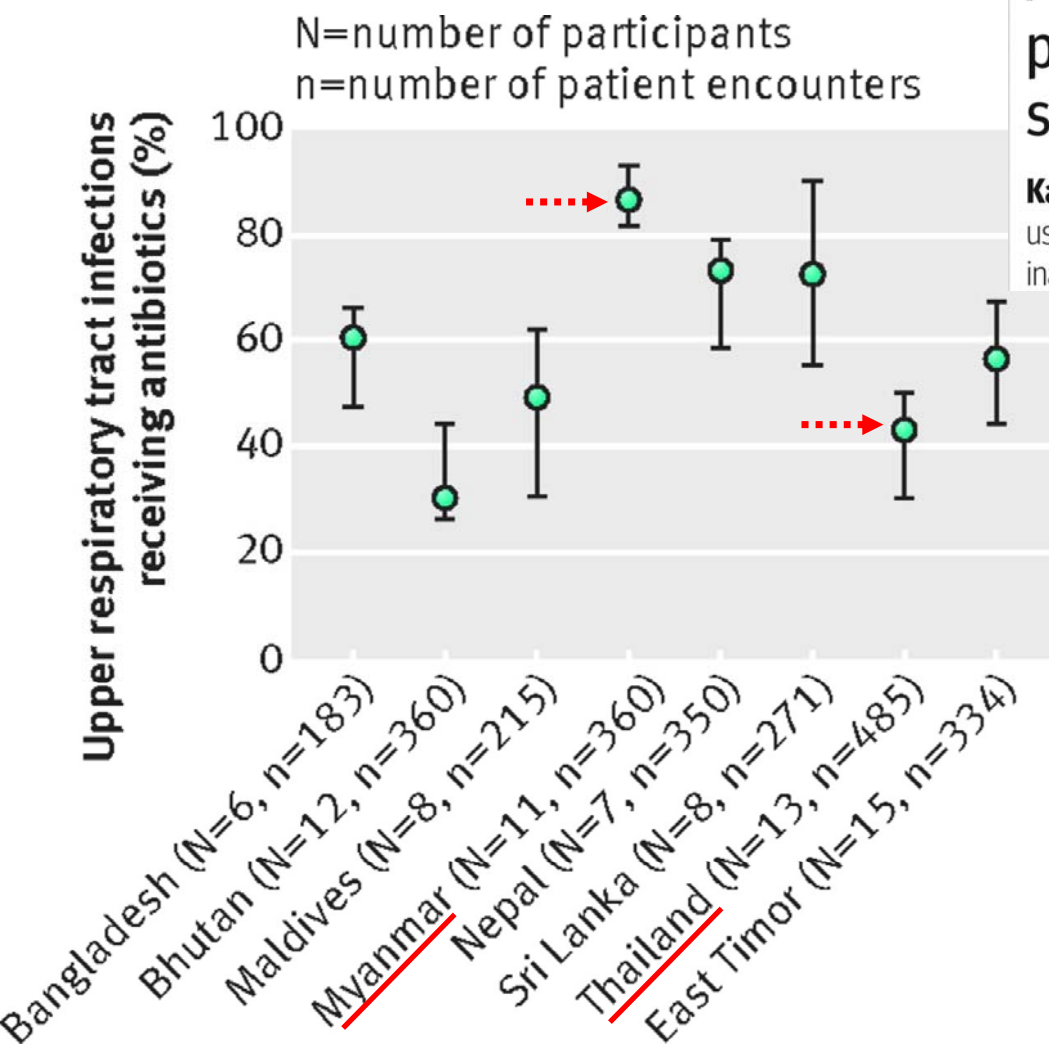
Bangkok



Background

- 80% of the consultations among patients attending primary care in Southeast Asia are due to upper tract respiratory infections (URTI)
- The nasopharynx is heavily colonized among children which is a risk factor for respiratory infections
- Distinguishing commensal from pathogenic microbiota is a challenge
- Antibiotic consumption impacts the nasopharyngeal microbiota which can worsen later respiratory infections





Antibiotic use in South East Asia and policies to promote appropriate use: reports from country situational analyses

Kathleen Holloway and colleagues discuss findings from a rapid assessment of antibiotic use and policies undertaken by South East Asian countries to drive further actions to reduce inappropriate use

Enrolment

Assessed for eligibility
(n=4,116)

Eligible
(n=2,410)

- Excluded (n=1,706)
- Age <1-year-old: n=22
 - No consent: n=109
 - Bleeding: n=106
 - Trauma: n=101
 - Symptoms >14 days: n=309
 - Referral to hospital: n=100
 - Malaria: n=7
 - Suspicion tuberculosis: n=438
 - Urinary tract infection: n=129
 - Skin/Dental abscess: n=242
 - Neoplastic disease: n=15
 - Not able to comply to follow-up: n=432

Allocation

Control group
(n=807)

Point-of-care CRP-testing
(n=1,603)

Naso-pharyngeal swab sampled
(n=627)

RNP3 negative
(n=42)

Chiangrai (n=338)

Hlaing Tha Yar (n=289)

Children (n=151)

Adults (n=187)

Children (n=117)

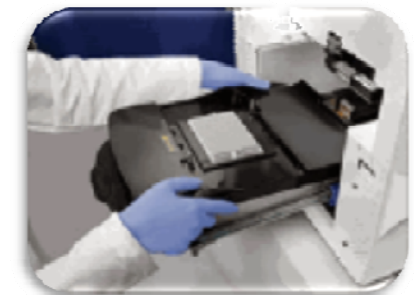
Adults (n=172)

The Instrument:

ViiA7™ by Life Technologies

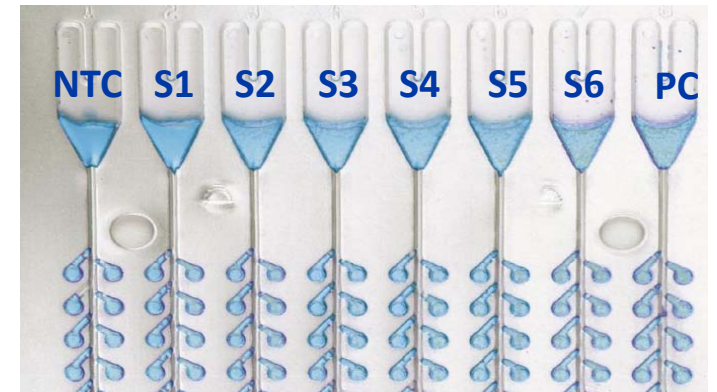
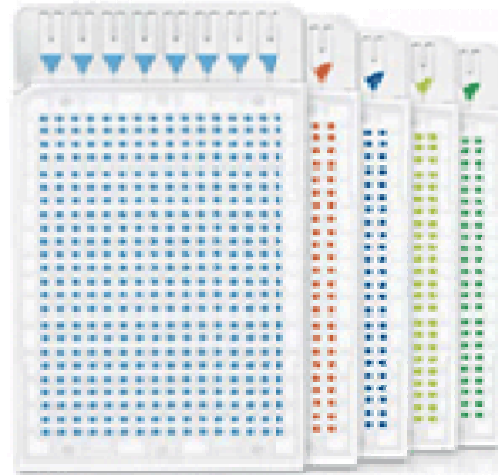


- Real-time PCR platform
- Covers ALL formats for PCR through interchangeable blocks
 - 96-well plates and 0.2ml tubes
 - 384-well plates
 - TaqMan® Array Cards



ONE platform for ALL PCR needs

TAC allows



- Simultaneously test 6 specimens for 48 targets
 - (8 ports, 384 wells total)
- Pre-loaded primers and probes
 - (singleplex 5' hydrolysis chemistry)
- Requires minimal TNA extract (20-50ul)
- Simple setup, low contamination risk due to closed system

Nasopharyngeal swabs (n=627)	<i>No organism detected (n=158)</i>	Exclusive bacteria (n=101)	Exclusive viruses (n=156)	Mixed bacteria-viruses (n=212)
Demographic characteristics				
Male, n (%)	67 (42.4)	43 (42.6)	61 (39.1)	113 (53.3) *
Age, median (IQR)	29 (12-49)	12 (8-32) *	27 (15-51)	6 (3-12) *
Under 6-year-old	13 (8.2)	13 (12.7)	9 (5.8)	102 (48.1) *
6-12-year-old	28 (17.7)	40 (39.6) *	21 (13.5)	58 (27.4) *
Over 12-year-old	117 (74.1)	48 (47.5) *	124 (79.5)	52 (24.5) *
Presence of comorbidities	35 (22.2)	20 (19.8)	34 (21.8)	23 (10.9) *
Self-reported antibiotic intake, n (%)	12 (7.6)	4 (4.0)	13 (8.3)	6 (2.8) *
Clinical & Outcome characteristics				
Documented fever, n (%)	54 (34.2)	44 (43.6)	61 (39.1)	106 (50.0) *
Respiratory presentation, n (%)	103 (65.2)	69 (68.3)	136 (87.2) *	163 (76.9) *
CRP (mg/L), median (IQR)	10 (8-37)	11 (8-32)	10 (8-25)	11 (8-21)
Antibiotic prescription, n (%)	51 (32.3)	37 (36.6)	58 (37.2)	71 (33.5)
Persistence of symptoms at Day 5, n (%)	41 (26.0)	31 (30.7)	66 (42.3) *	84 (39.6) *
Persistence of symptoms at Day 14, n (%)	8 (5.0)	4 (4.0)	5 (3.2)	9 (4.3)

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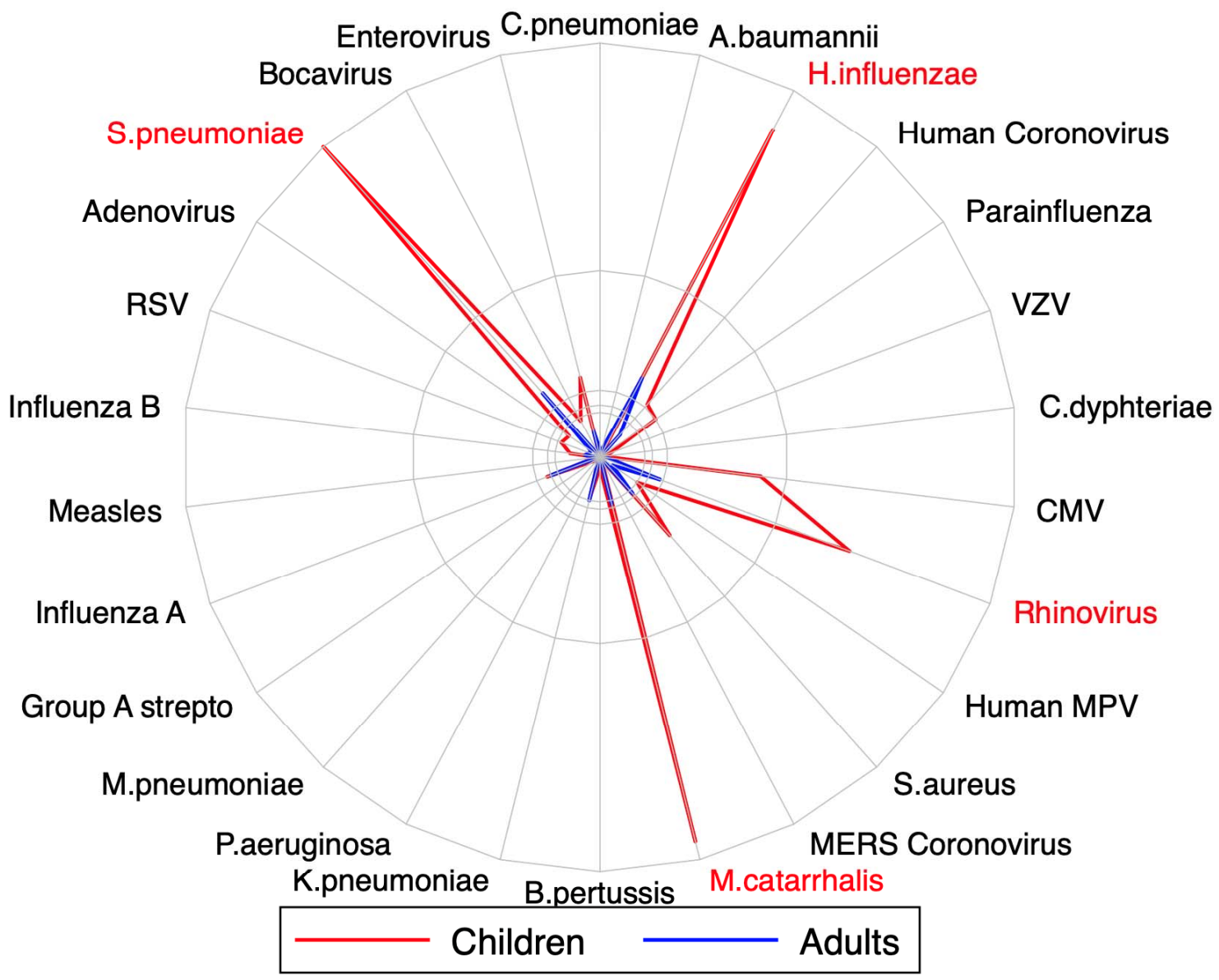
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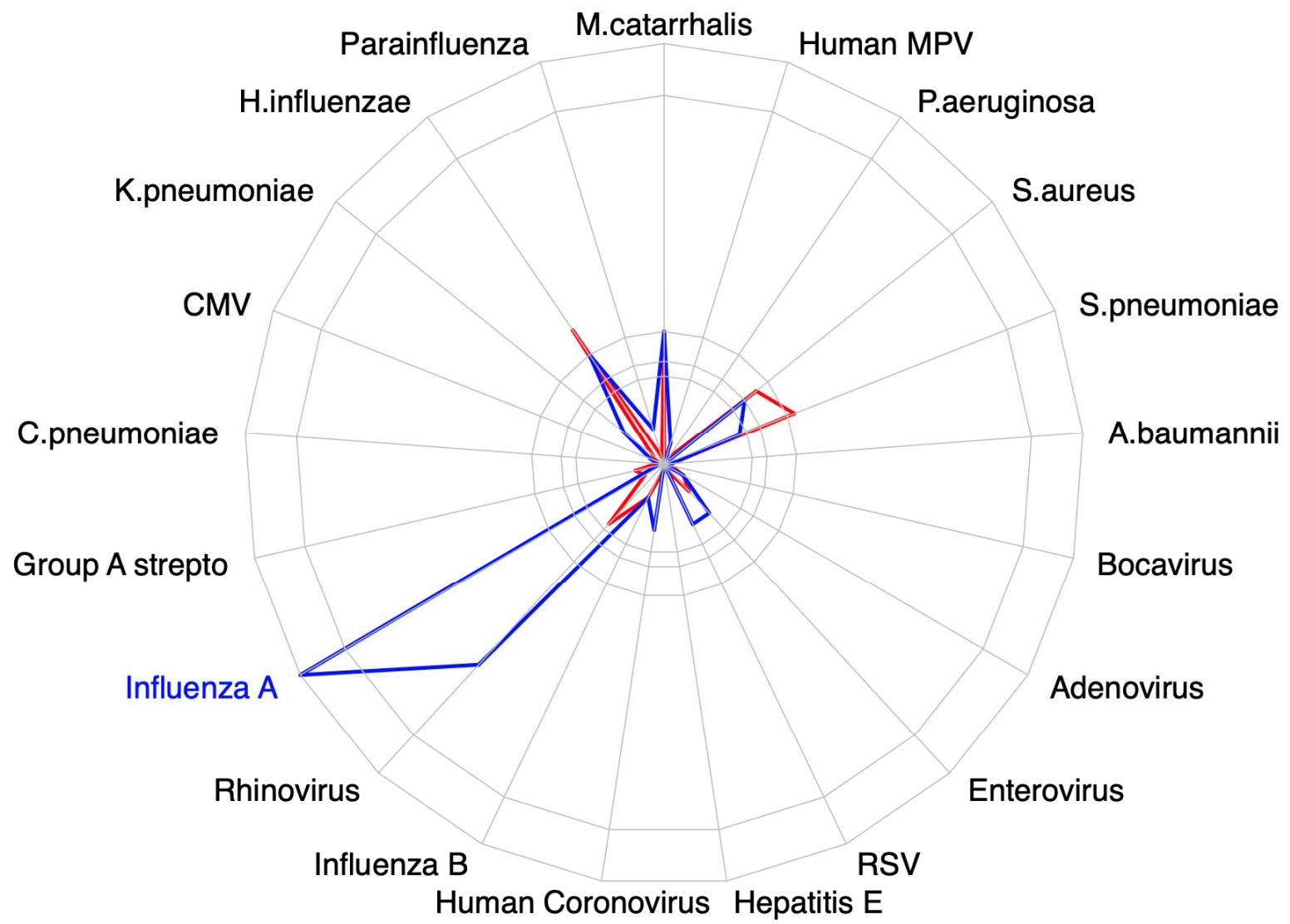
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Key preliminary messages - I

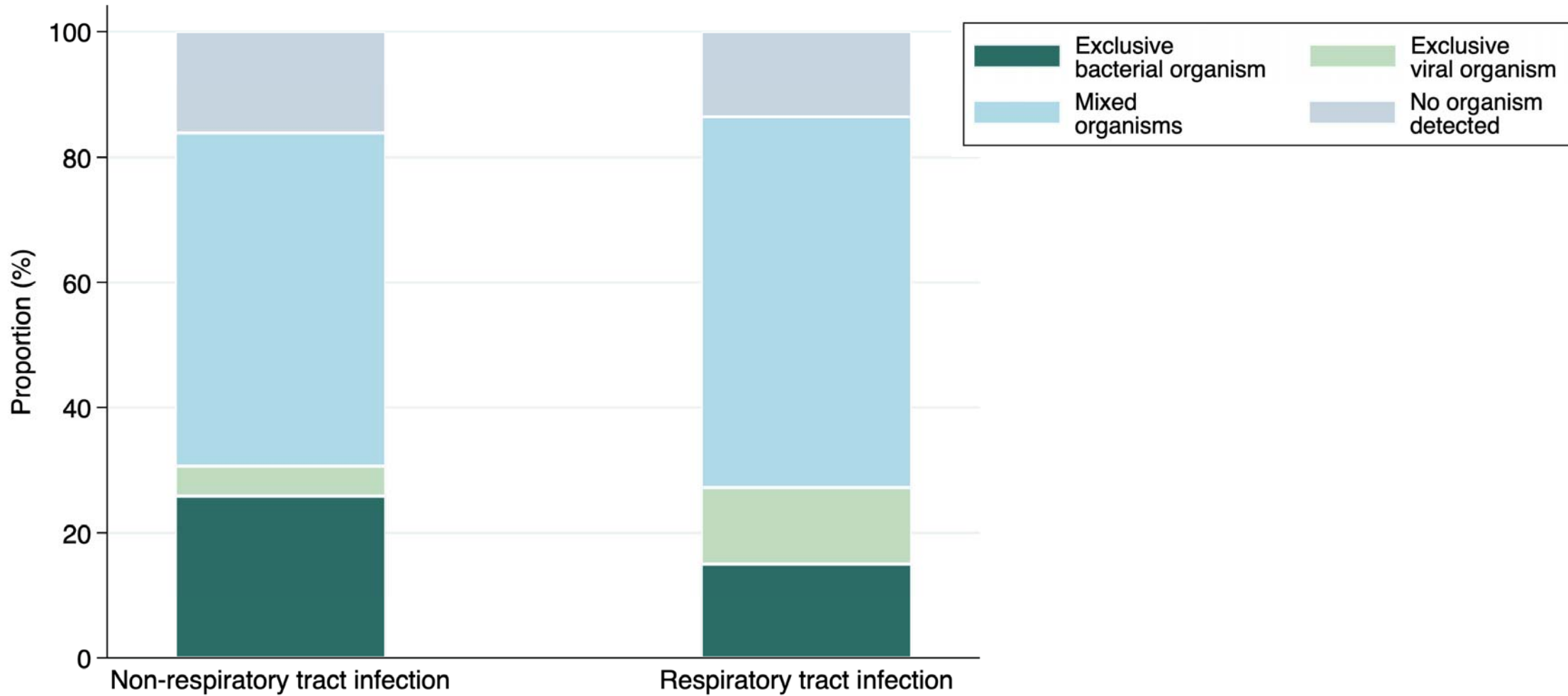
- Children present with a heavily colonized nasopharynx making the interpretation of aetiology challenging
- Among patients with exclusive viral organisms –mostly adults- 87% presented with respiratory symptoms
- 1/3 of patients with exclusive viral organisms had an antibiotic prescribed



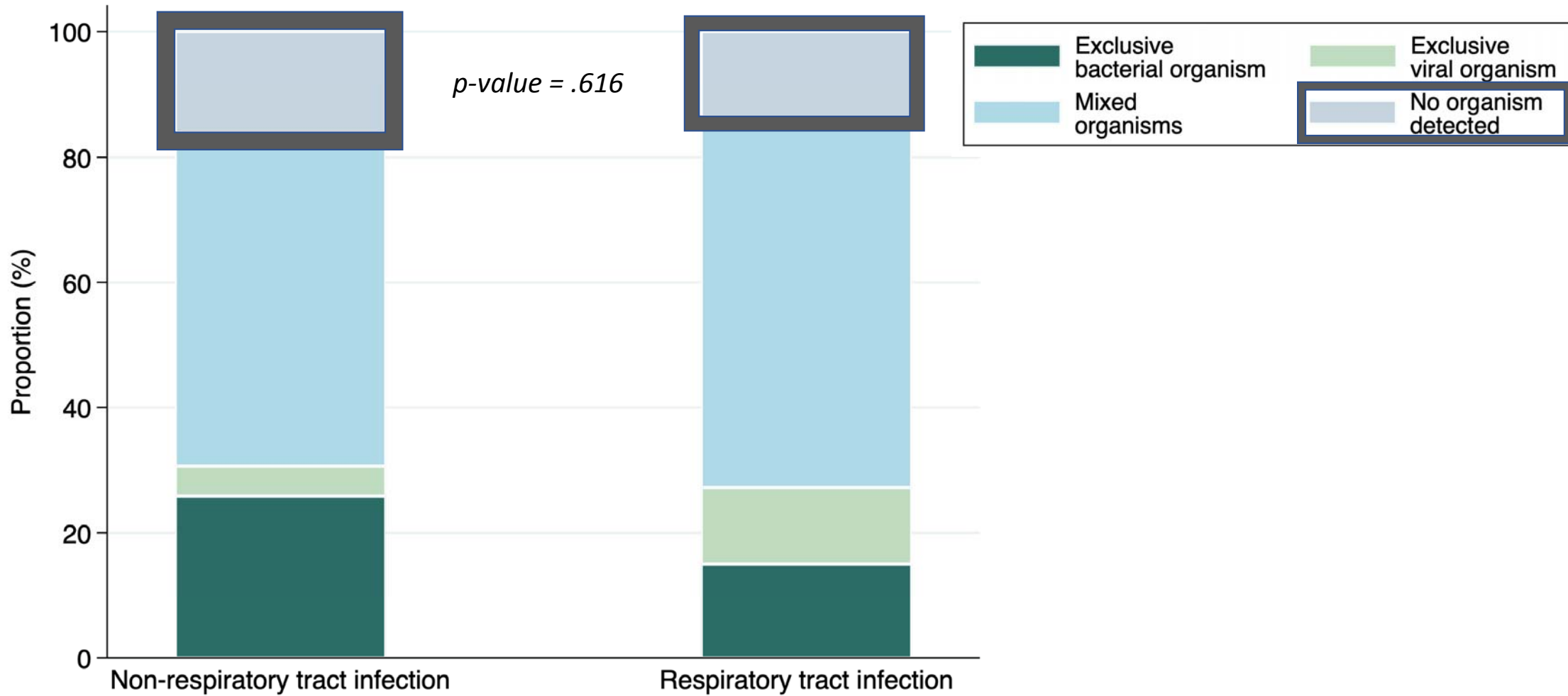


— Children
 — Adults

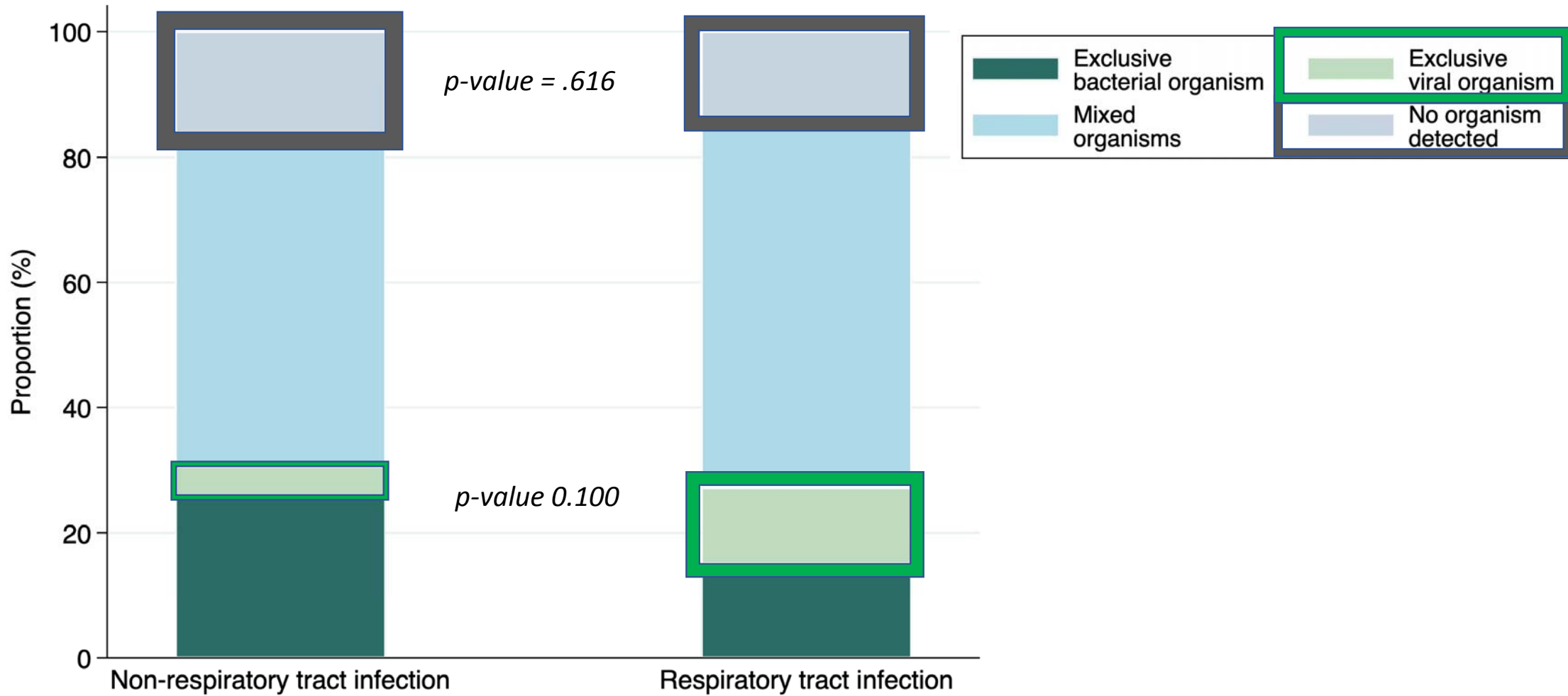
Organism type by clinical presentation in children



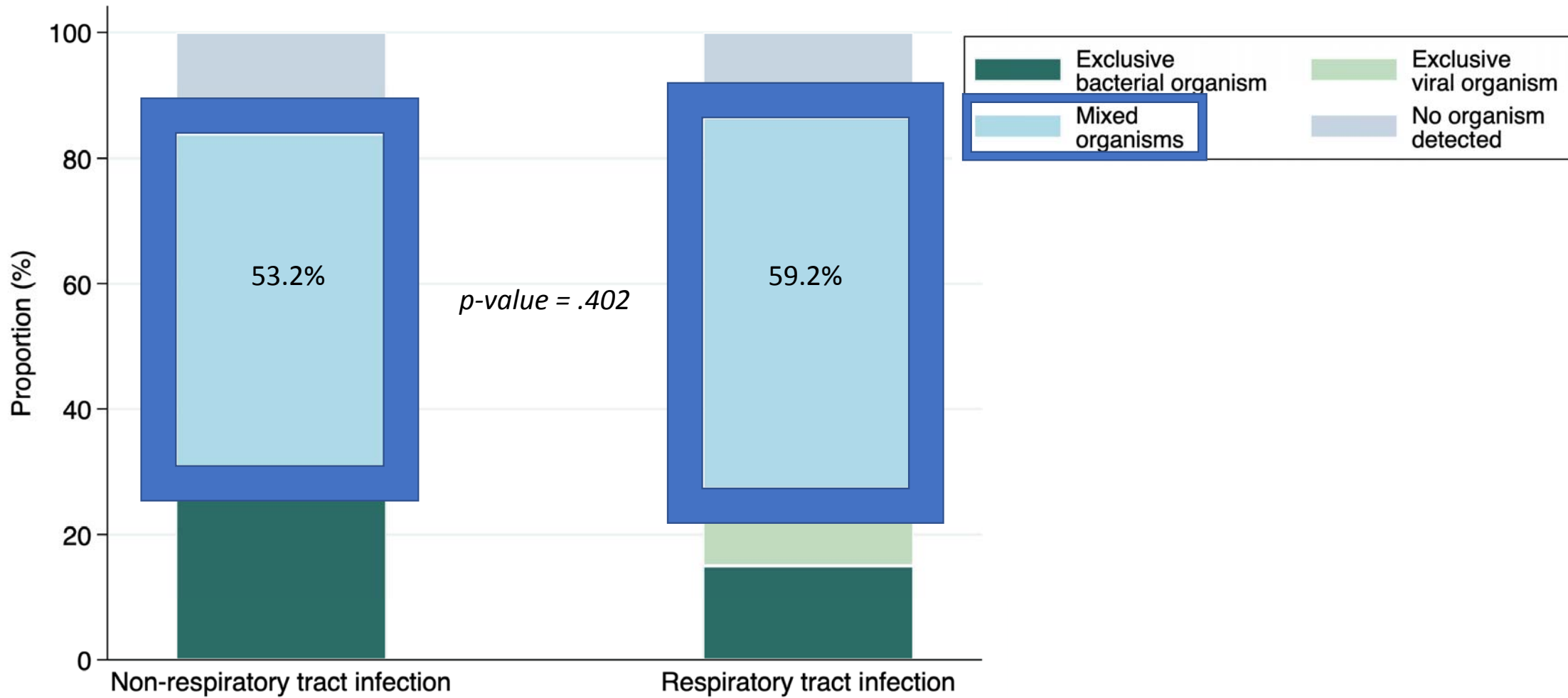
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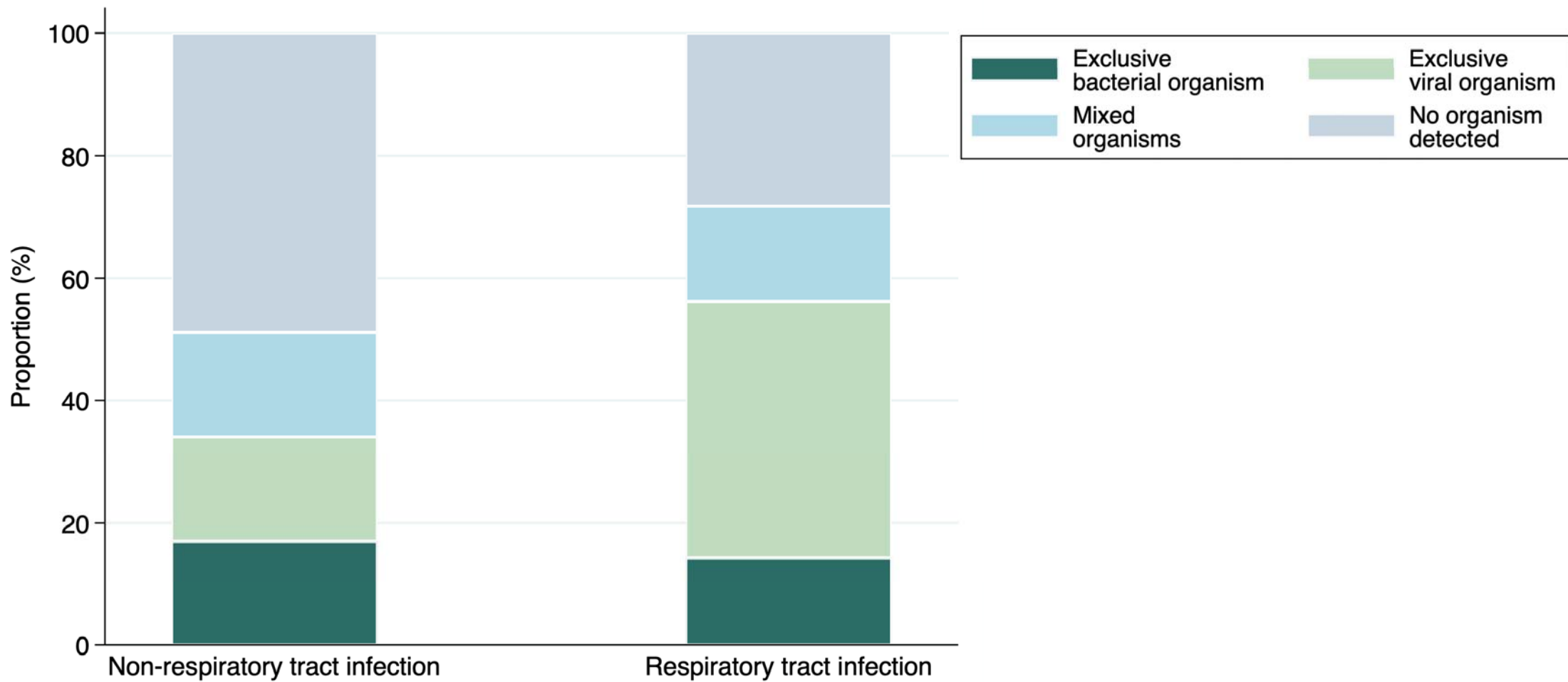
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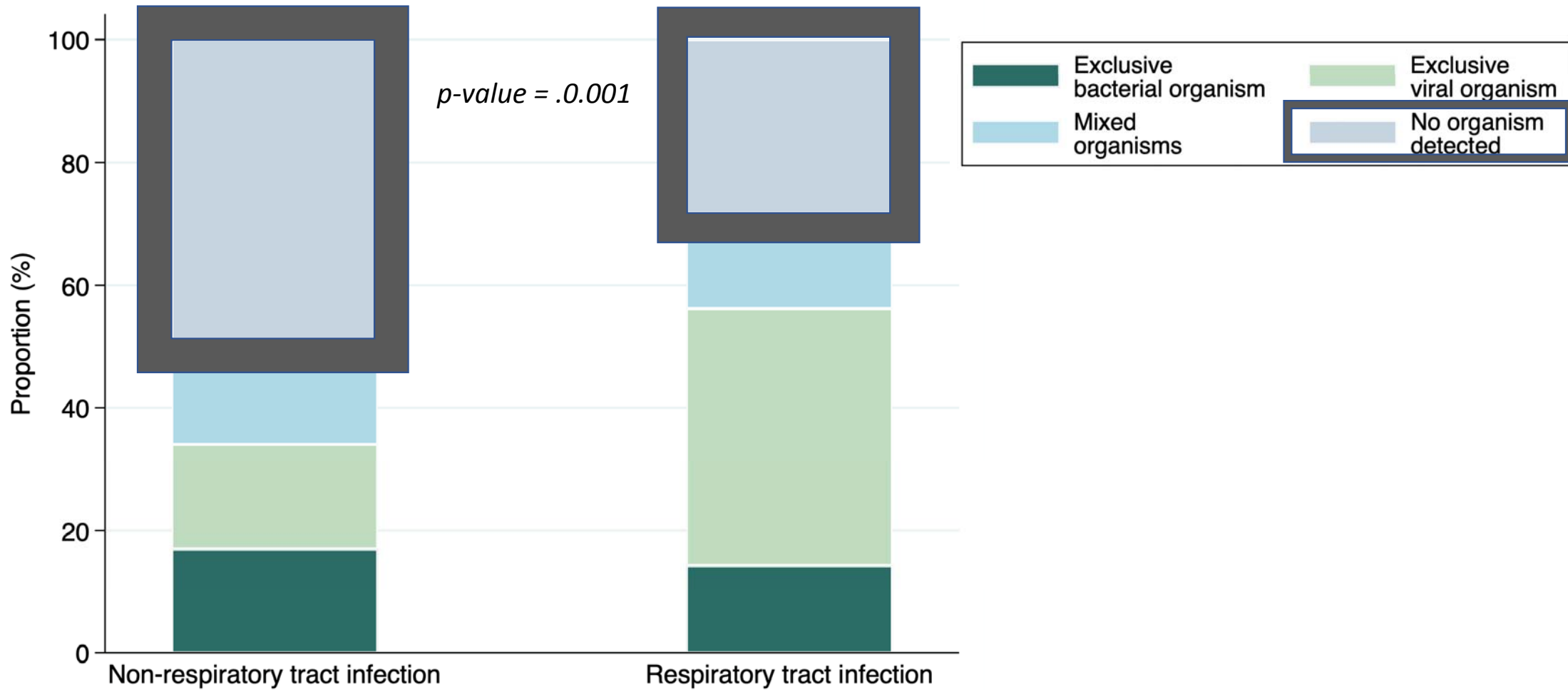
Organism type by clinical presentation in children



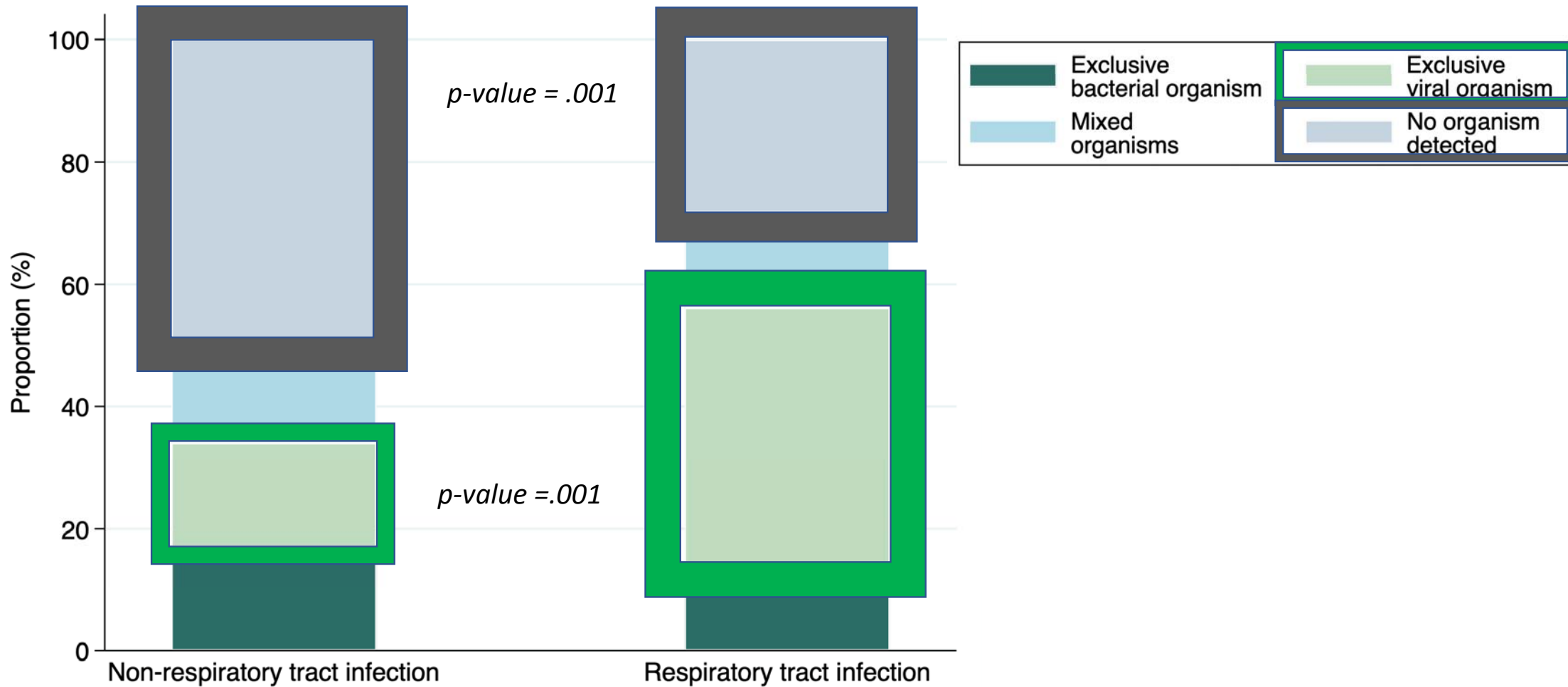
Organism type by clinical presentation in adults



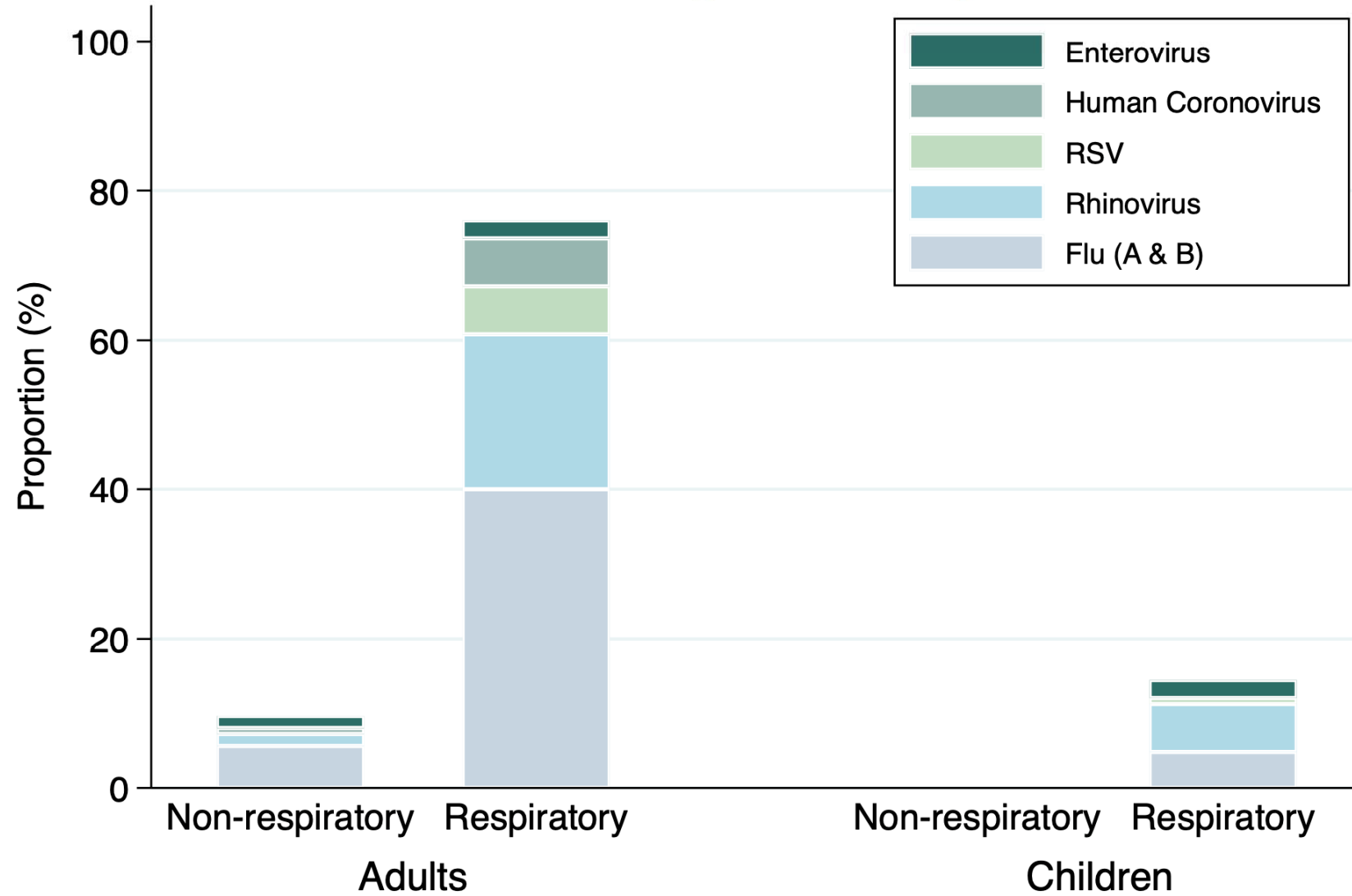
Organism type by clinical presentation in adults



Organism type by clinical presentation in adults



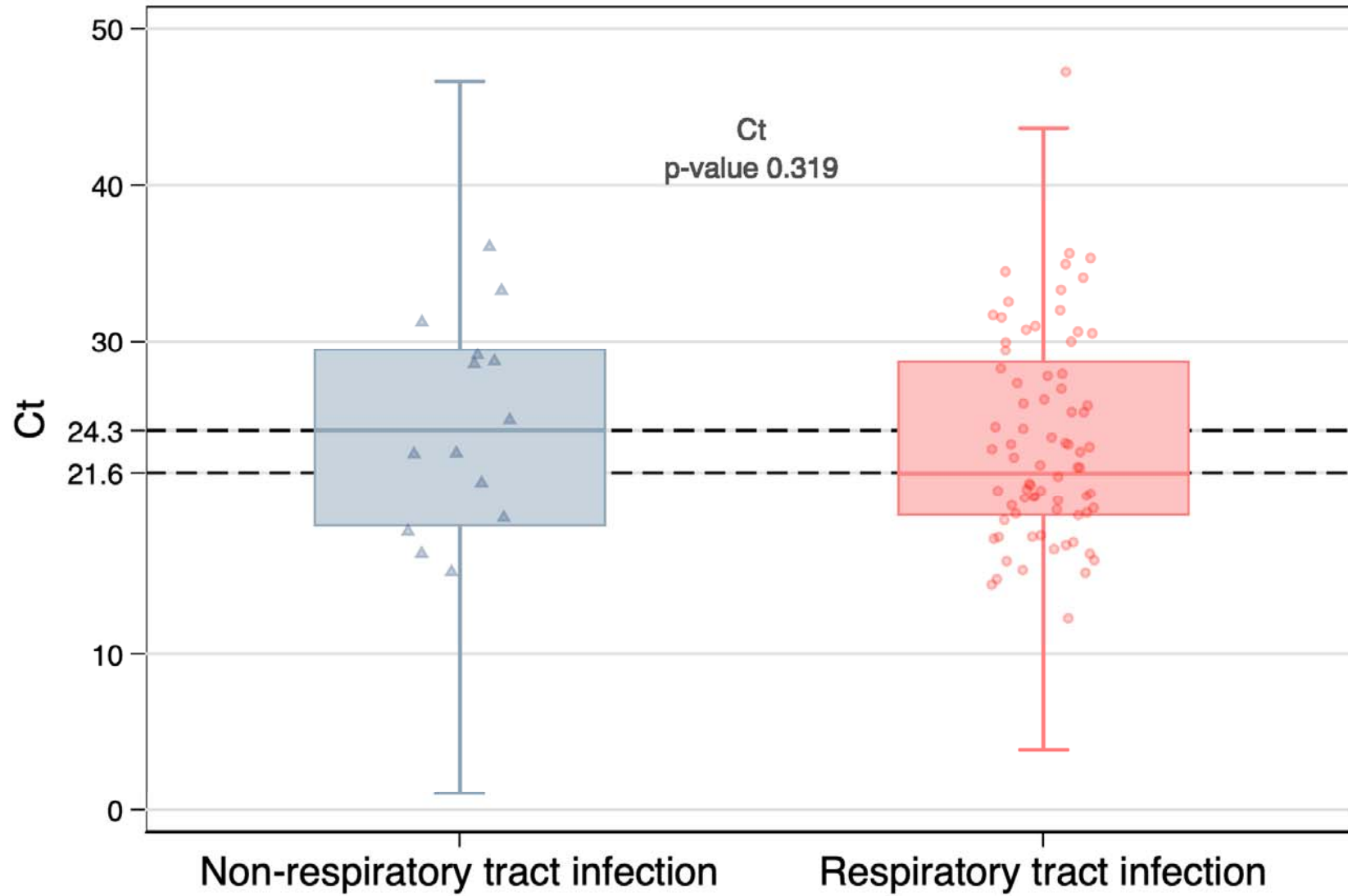
Exclusive viral organisms: Top 5 viruses



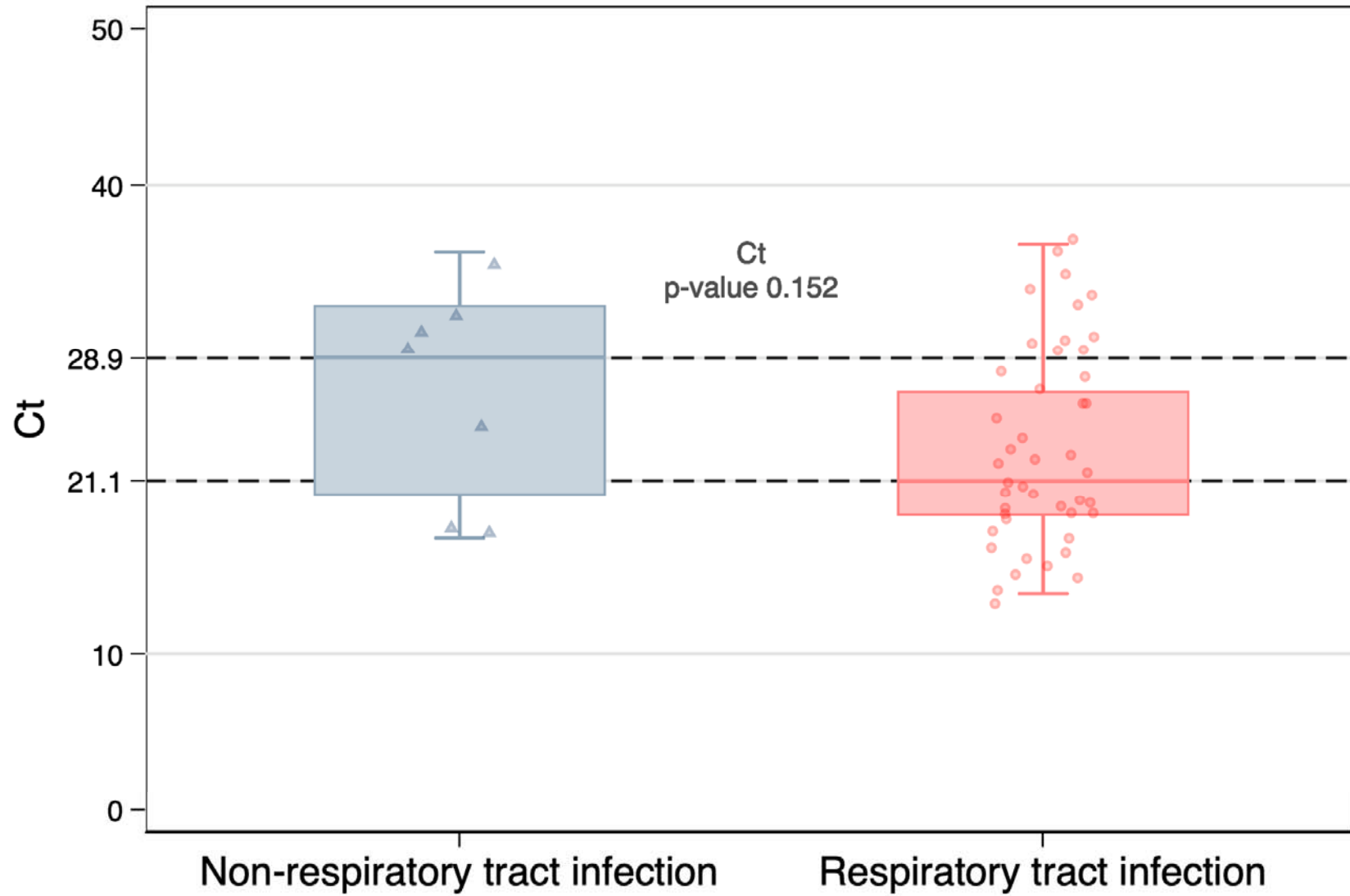
Key preliminary messages - II

- Attributing causality from NP swabs among children was not possible in our study
- Among adults, evidence for pathogenic Influenza (A & B); RSV; human Coronavirus is suggested
- Quantitation of these viruses load may help strengthening data interpretation

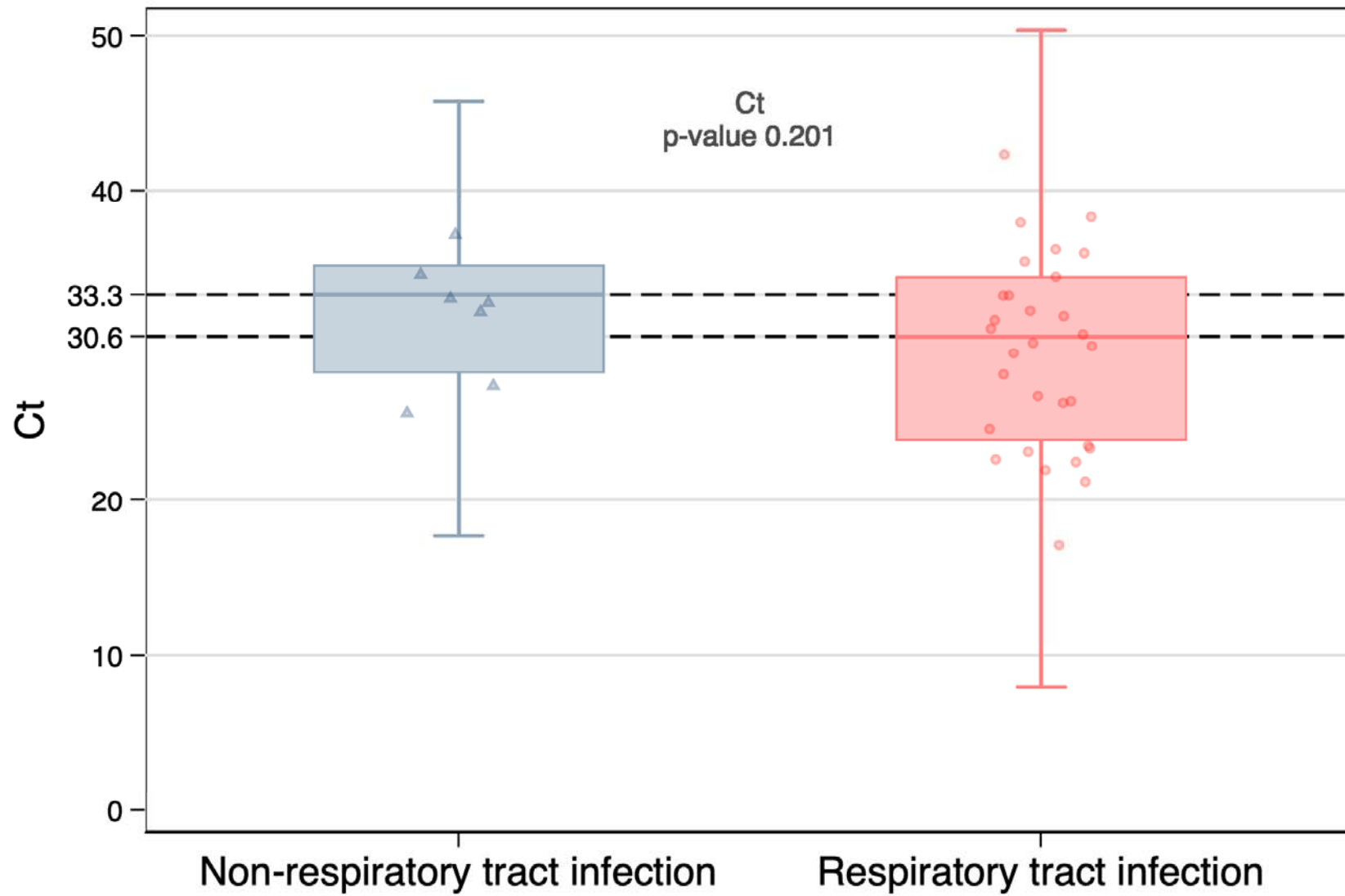
Influenza A



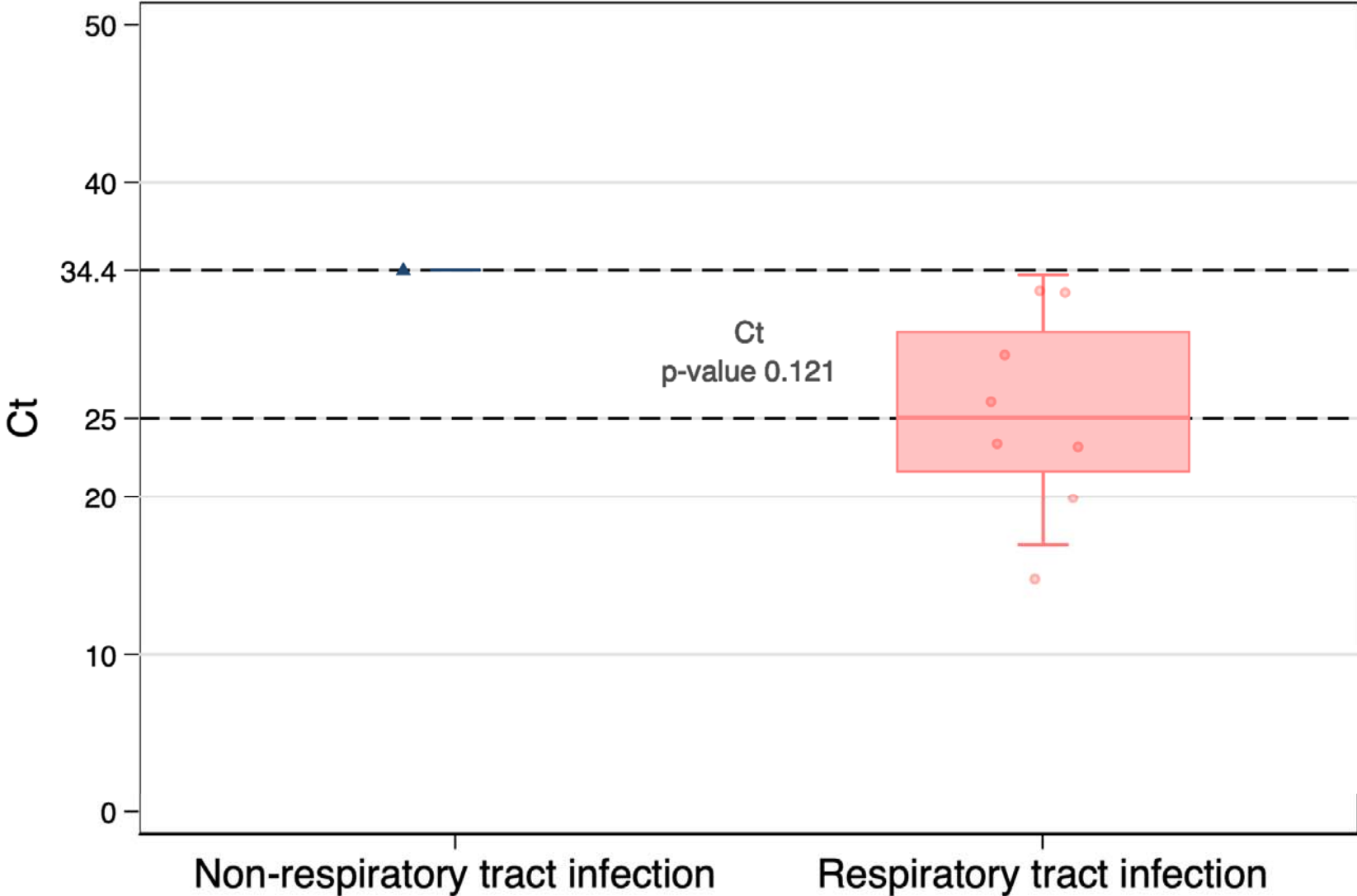
Exclusive Influenza A - Adults



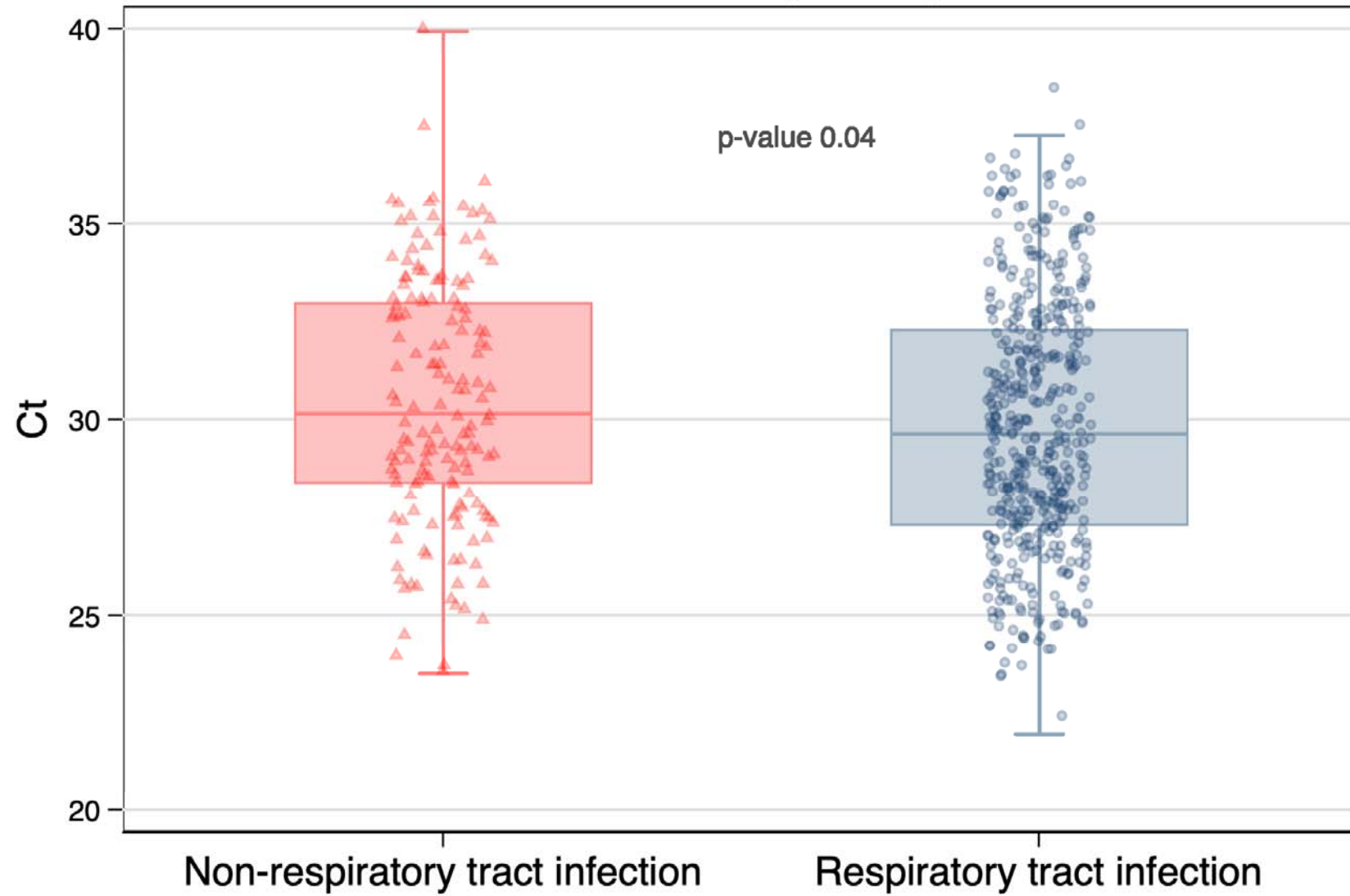
Human Coronavirus



Exclusive Human Coronavirus - Adults



RNase P3 (RNP3)



What conclusions...?

- One-time point nasopharyngeal swabs among children did not provide any evidence for attributing the cause of respiratory symptoms
- Among adults, Influenza (A & B); RSV & human Coronavirus may be pathogenic although the relative quantification was not significant
- How to strengthen the pathogenic role of these viral organisms?
 - Concomitant blood analysis using pathogen-specific immuno-assay with neutralizing antibodies
 - Standard curve for absolute quantification measuring each pathogen load for more accurate swabs comparison

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MORU & MOCRU colleagues including members of administrative team, Clinical Trial Support Group, Microbiology, site study staff

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- Narisara Chantratita
- Stuart Blacksell
- Phaikyeong Cheah
- Nick Day
- Nick White
- Jonas Winchell & Maureen Diaz
- Do Thi Thuy Nga
- Heiman Wertheim
- Dr Supalert & Dr Daranee
- Rachel Greer
- Tri Wangrangsimakul
- Marco Haenssgen
- Nutch Charoenboon
- Pimnara Peerawaranun

Thank you!!

MORU 
Tropical Health Network

