

Antibiotic Prescribing Practices in Pediatric Acute Respiratory Illnesses in Vietnam

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BACKGROUND

- Antimicrobial resistance (AMR) is an increasing global challenge
- AMR is influenced by various factors
 - Antibiotic overprescribing
 - Misuse of antibiotics
 - Knowledge gaps in antibiotics
 - Evolution of bacteria
- Combating AMR is particularly challenging in low- and middle-income countries (LMIC) such as Vietnam
- High rates of AMR in Vietnam
- Antibiotics frequently overprescribed in the pediatric population and particularly for acute respiratory illnesses (ARI)
- The objective of this study was to describe the antibiotic prescribing practices for pediatric ARIs in Northern Vietnam

METHODS

- Retrospective secondary analysis on de-identified data sets from prior OUCRU studies
 - 112 primary care centers in Northern Vietnam
- Inclusion criteria:
 - Pediatric patients aged ≤15 years
 - January 1-December 31, 2019
 - ICD-10 codes for ARI
- Variables collected: age, sex, district, antibiotic prescribed, WHO access, watch, reserve (AWaRe) classification, symptomatic agents prescribed, signs and symptoms
- Descriptive statistical analysis

RESULTS

Table 1. Demographics and ICD-10 Codes of Pediatric ARI Encounters in 2019 in Northern Vietnam

	Received Antibiotics (N=34018)	Did Not Receive Antibiotics (N = 1661)	p-value
Age, n (%)			1.00
0 to <5 years	8770 (25.8)	423 (25.5)	
5 to 15 years	25248 (74.2)	1238 (74.5)	
Mean (SD)	7.8 (4.1)	7.8 (4.0)	
Gender, n (%)			0.057
Female	16085 (47.3)	826 (49.7)	
Male	17933 (52.7)	835 (50.3)	
District, n (%)			
Hai Hau	8096 (23.8)	47 (2.8)	<0.00001
Nam Truc	3834 (11.3)	943 (56.8)	<0.00001
Nghia Hung	5741 (16.9)	358 (21.6)	<0.00001
Truc Ninh	2762 (8.1)	125 (7.5)	0.407
Xuan Truong	7313 (21.5)	101 (6.1)	<0.00001
Y Yen	6272 (18.4)	87 (5.2)	<0.00001
ICD-10 Code, n (%)			
H65: Nonsuppurative otitis media	55 (0.2)	0 (0.0)	0.1846
J00: Acute nasopharyngitis (common cold)	1991 (5.9)	197 (11.9)	<0.00001
J01: Acute sinusitis	84 (0.2)	4 (0.2)	1
J02: Acute pharyngitis	20496 (60.3)	774 (46.6)	<0.00001
J03: Acute tonsillitis	3369 (9.9)	121 (7.3)	0.0003
J04: Acute laryngitis	178 (0.5)	0 (0.0)	0.0005
J06: Acute upper respiratory infections of multiple & unspecified sites	1184 (3.5)	37 (2.2)	0.0045
J09+11: Influenza due to unidentified influenza virus	644 (1.9)	45 (2.7)	0.222
J12+18: Viral pneumonia, not elsewhere classified	1272 (3.7)	5 (0.3)	<0.00001
J20+21: Acute bronchitis + Acute bronchiolitis	4739 (13.9)	477 (28.7)	<0.00001
J22: Unspecified acute lower respiratory infection	6 (0.02)	1 (0.1)	0.2838

Table 2. Signs and Symptoms of Pediatric ARI Encounters in 2019 in Northern Vietnam

	Received Antibiotics (N=34018)	Did Not Receive Antibiotics (N = 1661)	p-value
Chest Pain	37 (0.1)	0 (0.0)	0.4181
Cough	25728 (75.6)	1479 (89.0)	<0.00001
Dyspnea	1430 (4.2)	46 (2.8)	0.003
Ear Discharge	24 (0.1)	1 (0.1)	1
Ear Pain	46 (0.1)	2 (0.1)	1
Exudates	57 (0.2)	2 (0.1)	1
Fatigue	828 (2.4)	52 (3.1)	0.0748
Fever	13924 (40.9)	678 (40.8)	0.9389
Headache	1105 (3.2)	64 (3.9)	0.1795
Hoarse Voice	169 (0.5)	1 (0.1)	0.0053
Jaw Pain	28 (0.1)	1 (0.1)	1
Lymphadenopathy	166 (0.5)	2 (0.1)	0.0262
Myalgia	9 (0.02)	4 (0.2)	0.0024
Nasal Congestion	89 (0.3)	6 (0.4)	0.4567
Nausea	52 (0.2)	1 (0.1)	0.5191
Poor Appetite	1640 (4.8)	190 (11.4)	<0.00001
Rales	3276 (9.6)	388 (23.4)	<0.00001
Rhinitis	6463 (19.0)	348 (21.0)	0.0511
Sinus Pain	1 (0.003)	0 (0.0)	1
Sneezing	1265 (3.7)	69 (4.2)	0.3537
Sore Throat	9347 (27.5)	503 (30.3)	0.0134
Sputum Production	3081 (9.1)	96 (5.8)	<0.00001
Tachypnea	48 (0.1)	0 (0.0)	0.1727
Throat Red	11500 (33.8)	304 (18.3)	<0.00001
Tonsillitis	2439 (7.2)	100 (6.0)	0.0784
Vomiting	251 (0.7)	14 (0.8)	0.5593

Figure 1. Antibiotic Class Prescribed for Pediatric ARI Encounters in 2019 in Northern Vietnam

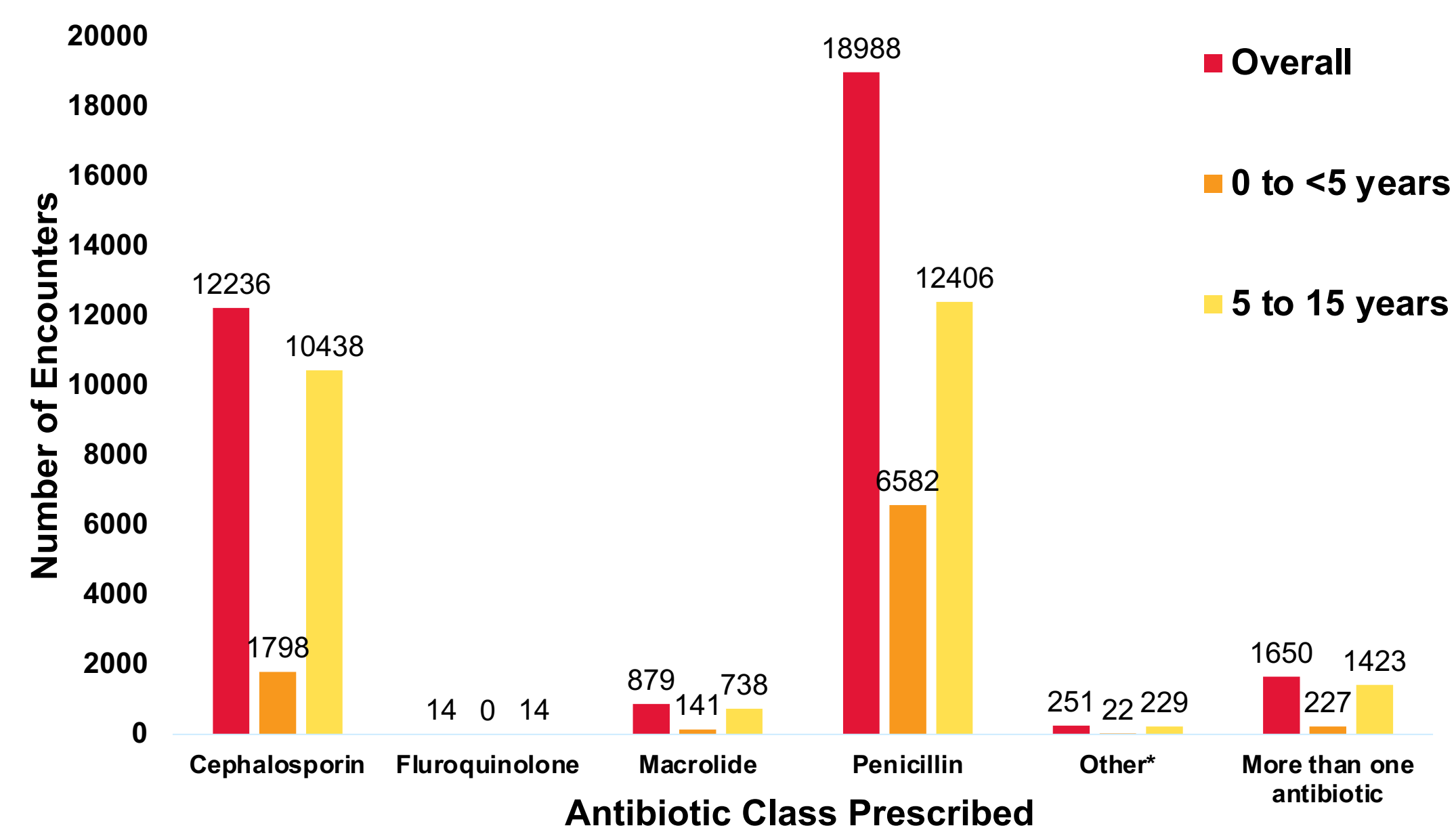
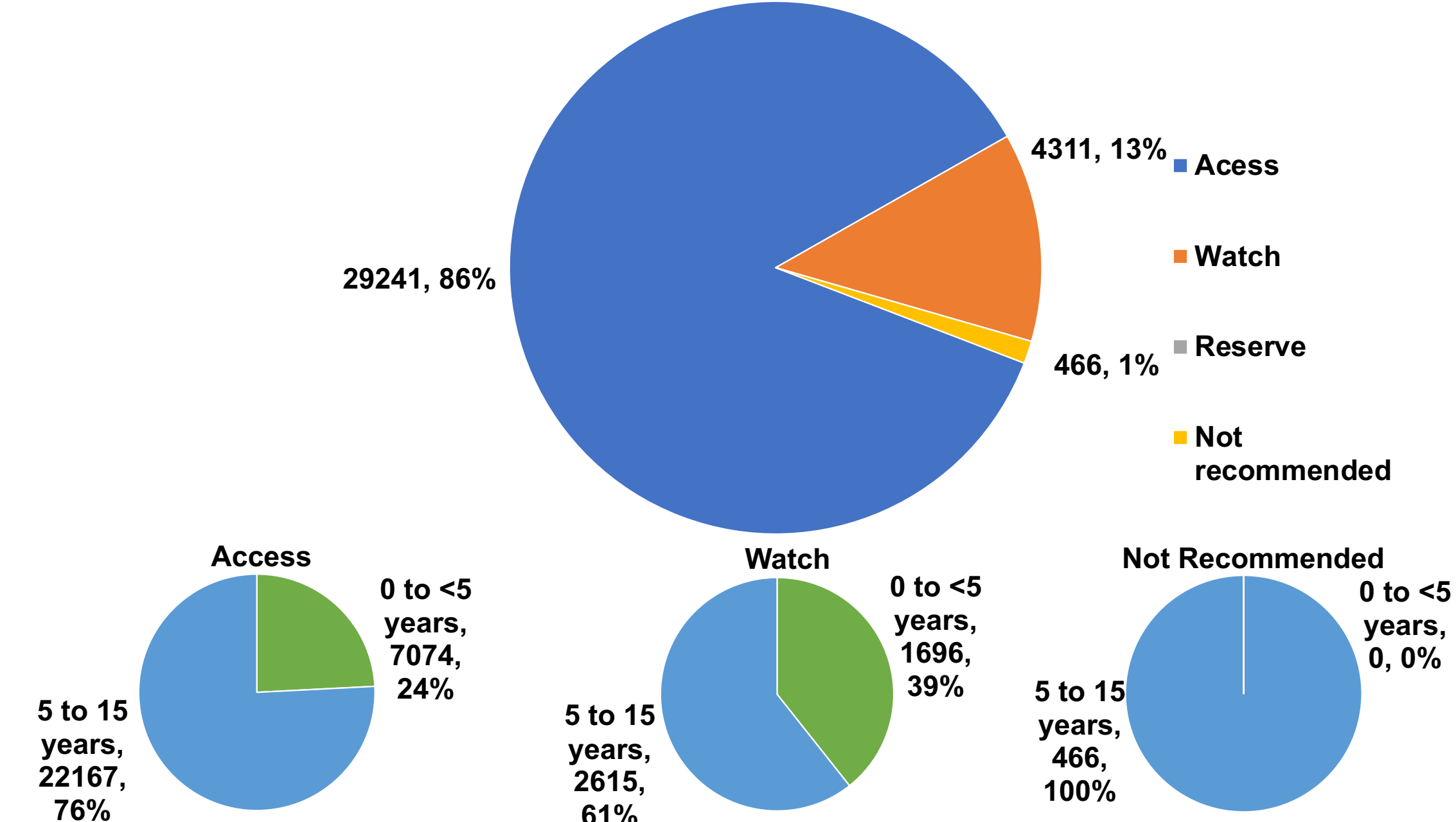


Figure 2. WHO AWaRe Classification for Antibiotics Prescribed for Pediatric ARI Encounters in 2019 in Northern Vietnam



CONCLUSIONS

- Antibiotics frequently prescribed for pediatric ARI in Northern Vietnam, despite many likely secondary to viruses
 - Not only leads to AMR but can increase adverse drug events and unnecessary costs
- Majority of antibiotics prescribed were WHO AWaRe access antibiotics but >10% were still watch antibiotics or not recommended

LIMITATIONS

- Missing or incompletely documented charts
- Recall bias of signs and symptoms
- Limited to North Vietnam

IMPLICATIONS

- Further investigation into appropriateness of antibiotic prescriptions, particularly pharyngitis
- Identify target areas for improved prescribing practices to reduce burden of AMR
- Need for more stewardship initiatives in LMIC such as Vietnam**

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