Project Title

Determinants of Antibiotic Expectation and Receipt Among Patients Presenting to Emergency Departments with Upper Respiratory Tract Infection During The COVID-19 Pandemic

Project Lead and Members

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Organisation(s) Involved

Tan Tock Seng Hospital, National University Hospital, Khoo Teck Puat Hospital, Changi General Hospital, National Centre for Infectious Diseases, Lee Kong Chian School of Medicine, Nanyang Technological University

Healthcare Family Group(s) Involved in this Project

Medical, Healthcare Administration

Applicable Specialty or Discipline

Emergency Medicine, Infectious Diseases Research and Training Office, Preventive and Population Medicine, Office of Clinical Epidemiology, Analytics and Knowledge

Project Period

Start date: 15/03/2021

Completed date: 03/03/2022

Aims

The aim of this study is to assess the factors associated with antibiotics expectation and receipt for uncomplicated URTI patients in four Singapore EDs during the COVID-19 pandemic.

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Lessons Learnt

The lessons learnt include effective patient communication, statistical methodology, presentation skills, an understanding of the misconceptions patients have on antibiotics, and the reasons patients expect antibiotics when not indicated.

Conclusion

See poster appended/ below

Additional Information

- Singapore Health & Biomedical Congress (SHBC) 2022: Best Poster Award (Health Services Research) (Posters category) – (Merit Award)
- Best oral presentation at the 32nd Congress of Antimicrobial Chemotherapy early career research workshop session

Project Category

Applied/ Translational Research

Quantitative Research

Keywords

Emergency Care, Antibiotic Resistance, Infectious Diseases

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Determinants of antibiotic expectation and receipt among patients presenting to emergency departments with upper respiratory tract infection during the COVID-19 pandemic

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BACKGROUND

Antimicrobial resistance

Misuse and overuse of antibiotics

Antimicrobial resistance

Consequences of AMR

In 2019→ 4.95 million deaths associated with / 1.27 million deaths attributable to bacterial AMR[1]

By 2050→ 10 million deaths annually due to AMR[2]

Emergency departments

Pre-COVID-19, upper respiratory tract infections (URTI) account for 20-25% of non-urgent emergency department (ED) visits, of which, 10-15% resulted in an antibiotic prescription. Patients who attended the emergency department (ED) for URTI were also more likely to receive antibiotics if they expected them[3]. These expectations could have changed with the change in health-seeking behaviour during the pandemic.

AIM

To assess the factors associated with antibiotics expectation and receipt for uncomplicated URTI patients in four Singapore EDs during the COVID-19 pandemic.

METHODS

Study design

- Cross-sectional survey post patient consultation
- Data collection period: **March 2021 – March 2022**

Study setting

- Four emergency departments in Singapore

Inclusion criteria

- Aged ≥ 21
- Patients with URTI (ICD-10: J00 – J06) as final diagnosis

Exclusion criteria

- Hospital admission
- Prior ED visit for URTI within 30 days

Questionnaire fields

- Demographics
- Health status (vaccination status, illness symptoms, co-morbidities)
- Knowledge, attitudes, and behaviour (KAB) on the use of antibiotics

Analysis

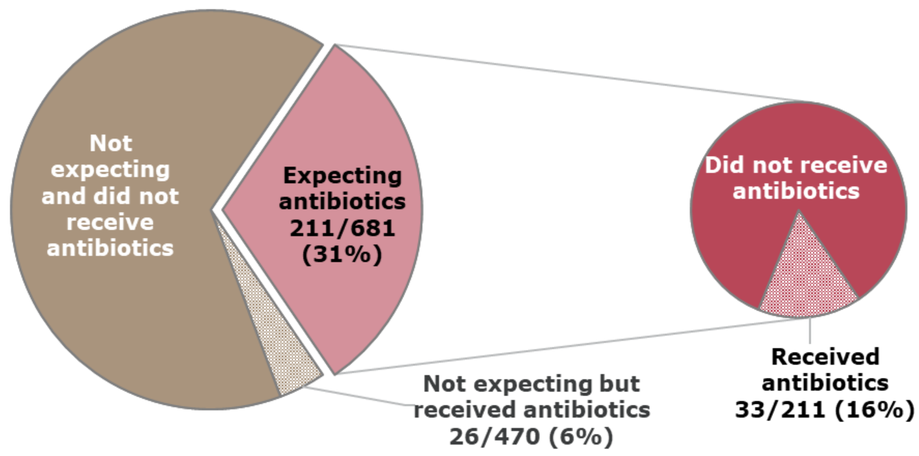
- Binary logistic regression

RESULTS

Baseline characteristics

Baseline characteristics of respondents, n(%)	All patients (N=681)
Age, mean (SD)	34.5 (12.7)
Tertiary education	224 (32.9%)
Presence of Comorbidity	
No comorbidity	621 (91.2%)
Mild	52 (7.6%)
Moderate/Severe	8 (1.2%)
Prior (non-ED) consult for same condition	
No prior consult	474 (69.6%)
Prior consult with antibiotics	44 (6.5%)
Prior consult without antibiotics	163 (23.9%)
Expects a COVID-19 test	534 (78.4%)
Antibiotics use knowledge	
Poor (Score ≤ 4)	276 (40.5%)
Moderate (Score 5-7)	278 (40.8%)
Good (Score ≥ 8)	127 (18.6%)
Expected antibiotics	211 (31.0%)

Antibiotics expectation and receipt



Antibiotic expectation

Model variables (Reference: Not expecting antibiotics)	Final model: Adjusted OR (95% CI)	P-value
Expects a COVID-19 test	**1.56** (1.01, 2.41)	**0.045**
Prior (non-ED) consult for the same condition		
No prior consult	Ref	
Consult with antibiotics	**6.58** (3.30, 13.11)	**<0.001**
Consult w/o antibiotics	**1.50** (1.01, 2.23)	**0.046**
Knowledge on antibiotics and antimicrobial resistance		
Good (≥ 80% correct)	Ref	
Moderate	**2.26** (1.33, 3.84)	**0.002**
Poor (≤ 40% correct)	**2.16** (1.26, 3.68)	**0.005**

Antibiotic receipt

Model variables (Reference: Did not receive antibiotics)	Final model: Adjusted OR (95% CI)	P-value
Expects an antibiotic prescription	**10.64** (5.34, 21.17)	**<0.001**
Expects a COVID-19 test	0.52 (0.26, 1.03)	0.061
Age category		
Above 50 years	Ref	
26 - 50 years	0.60 (0.23, 1.55)	0.290
25 years and below	1.79 (0.63, 5.09)	0.276
Education level		
Non-tertiary	Ref	
Tertiary	**2.20** (1.09, 4.43)	**0.027**
Prior (non-ED) consult for the same condition		
No prior consult	Ref	
Consult with antibiotics	**2.97** (1.26, 7.00)	**0.013**
Consult w/o antibiotics	1.29 (0.63, 2.65)	0.484
Pre-existing comorbidity		
No comorbidity	Ref	
Mild	2.28 (0.75, 6.94)	0.148
Moderate/Severe	6.17 (0.86, 44.24)	0.070

Patients expecting antibiotics during their ED visit were **10.6** times more likely to receive antibiotics**.** Compared with those not expecting antibiotics.

CONCLUSIONS

In conclusion, patients with URTI who expected antibiotics remained more likely than those who did not expect them to receive antibiotics during the COVID-19 pandemic. Poor knowledge and prior experiences were strong predictors for expecting antibiotics. Our findings highlighted an opportunity for leveraging the COVID-19 mass communication channels to educate the public on the non-necessity of antibiotics for URTI to address the problem of antibiotic misuse and AMR.

REFERENCES

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