

Respiratory Viral Testing is Associated with Lower Risk of Antibiotic Prescribing for Acute Upper Respiratory Infections at a Large Ambulatory Cancer Center



FRED HUTCH™



Seattle Cancer Care Alliance

Fred Hutch · Seattle Children's · UW Medicine

Elizabeth Krantz, MS,¹ Erica Stohs, MD, MPH,^{1,2} Ania Sweet, PharmD,^{3,4} Jacquelyn Zier, BA,¹ Sara Marquis, MPH,¹ Chikara Ogimi, MD,^{1,5,6} John Klaassen, BA,³ Steven Pergam, MD, MPH, FIDSA^{1,2,3} and Catherine Liu, MD, FIDSA^{1,2,3}

¹Fred Hutchinson Cancer Research Center, Seattle, WA; ²Division of Allergy & Infectious Diseases, University of Washington, Seattle, WA; ³Seattle Cancer Care Alliance, Seattle, WA; ⁴Department of Pharmacy, University of Washington, Seattle, WA; ⁵Department of Pediatrics, University of Washington, Seattle, WA; ⁶Pediatric Infectious Diseases Division, Seattle Children's Hospital, Seattle, WA

Contact Information:
Elizabeth Krantz, MS
Email: ekrantz@fredhutch.org

Background

- Inappropriate outpatient antibiotic prescribing for acute upper respiratory infections (URI) is a high priority target for antimicrobial stewardship and has not been described for cancer patients
- The potential impact of viral diagnostic testing on antibiotic prescribing for URIs has not been examined in an outpatient oncology setting

Objectives

- To characterize patterns of and factors associated with antibiotic prescribing among ambulatory oncology patients with URIs

Methods

Figure 1. Study Flowchart

Electronic Medical Record Abstraction for N=341:

- Outpatients ≥ 18 years old
- Seen at Seattle Cancer Care Alliance from 10/1/15 to 9/30/16
- With ICD-10 diagnosis code consistent with acute URI or acute bronchitis

Retrospective Chart Review for N=341:

- Verify the URI diagnosis code
- Define Day 0: date of 1st clinical encounter for URI
- Collect additional data

Eligible for Analysis
N=251

Excluded N=90:

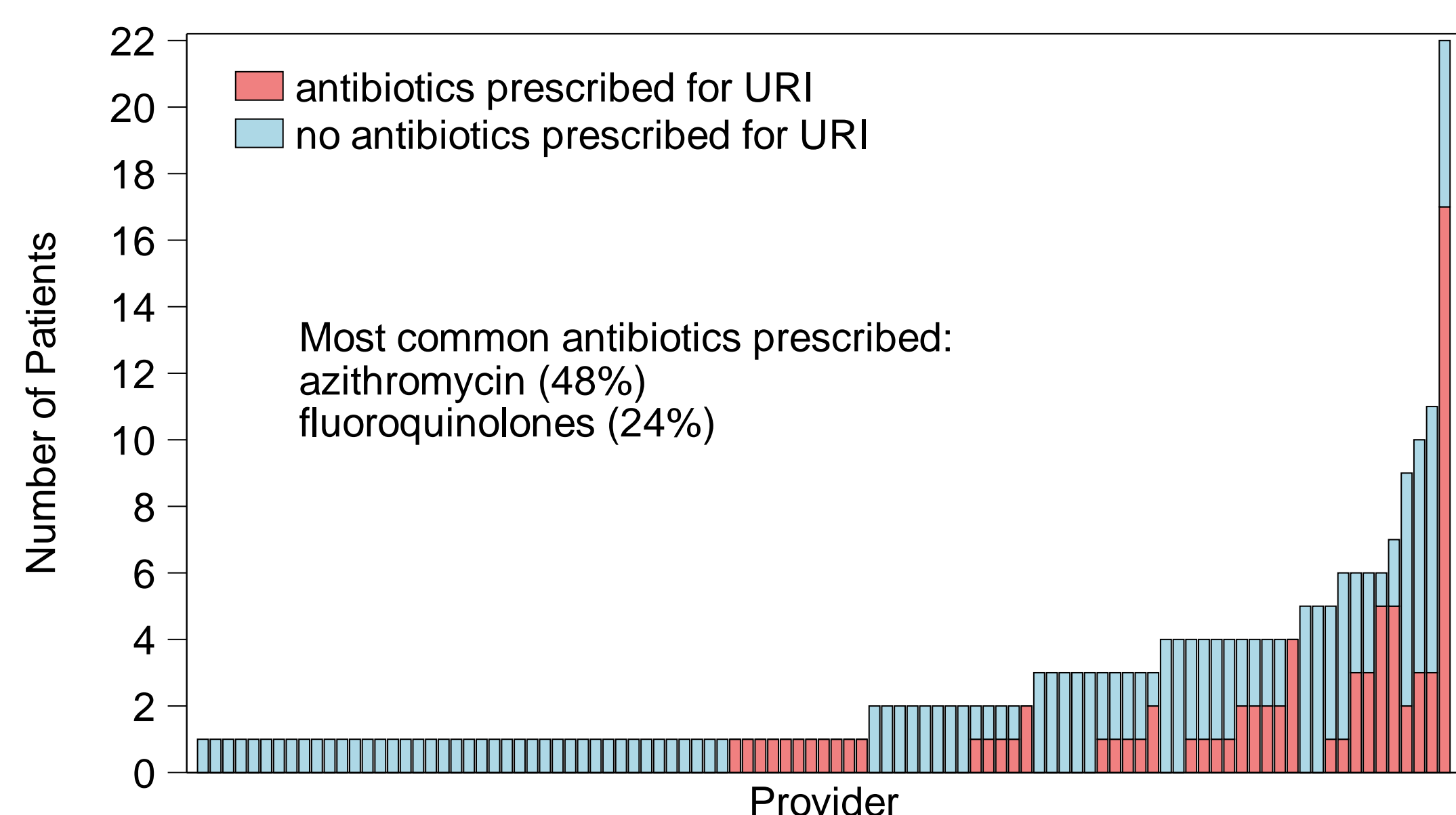
- N=76 no documented active URI symptoms on day 0
- N=12 lower tract infection on day 0
- N=2 developed URI while inpatient

Table 1. Baseline Characteristics of URI Outpatients^a

Characteristic at Day 0	Total Cohort ^b	Patients with Antibiotic Prescribed ^c
Number of providers	99	40
Number of patients	251	82
Viral test on day 0		
No	154 (61%)	64 (42%)
Yes	97 (39%)	18 (19%)
Sex		
Women	123 (49%)	46 (37%)
Men	128 (51%)	36 (28%)
Age, years	59 (18 - 90)	61 (20 - 90)
Peak flu season		
No (Apr - Nov)	130 (52%)	38 (29%)
Yes (Dec - Mar)	121 (48%)	44 (36%)
Symptoms		
Fever	39 (16%)	15 (38%)
No fever, with sputum production or chest congestion	52 (21%)	29 (56%)
Any other respiratory symptoms	160 (64%)	38 (24%)
Primary malignancy		
Hematological malignancy or disorder	162 (65%)	44 (27%)
Solid tumor	86 (34%)	38 (44%)
Other	3 (1%)	0 (0%)
Immunosuppressive medications in previous 2 weeks		
No	152 (61%)	50 (33%)
Yes	99 (39%)	32 (32%)
Chemotherapy within previous 30 days		
No	113 (45%)	33 (29%)
Yes	138 (55%)	49 (36%)

^a Summaries are n(%) for categorical and median(range) for continuous variables.
^b Percentages are column percentages.
^c Patients with antibiotic prescribed for URI in days 0-14. Percentages are row percentages.

Figure 2. Antibiotic Prescribing by Provider



Results

Figure 3. Frequency of Antibiotic Prescribing and Viral Testing for URI by Service

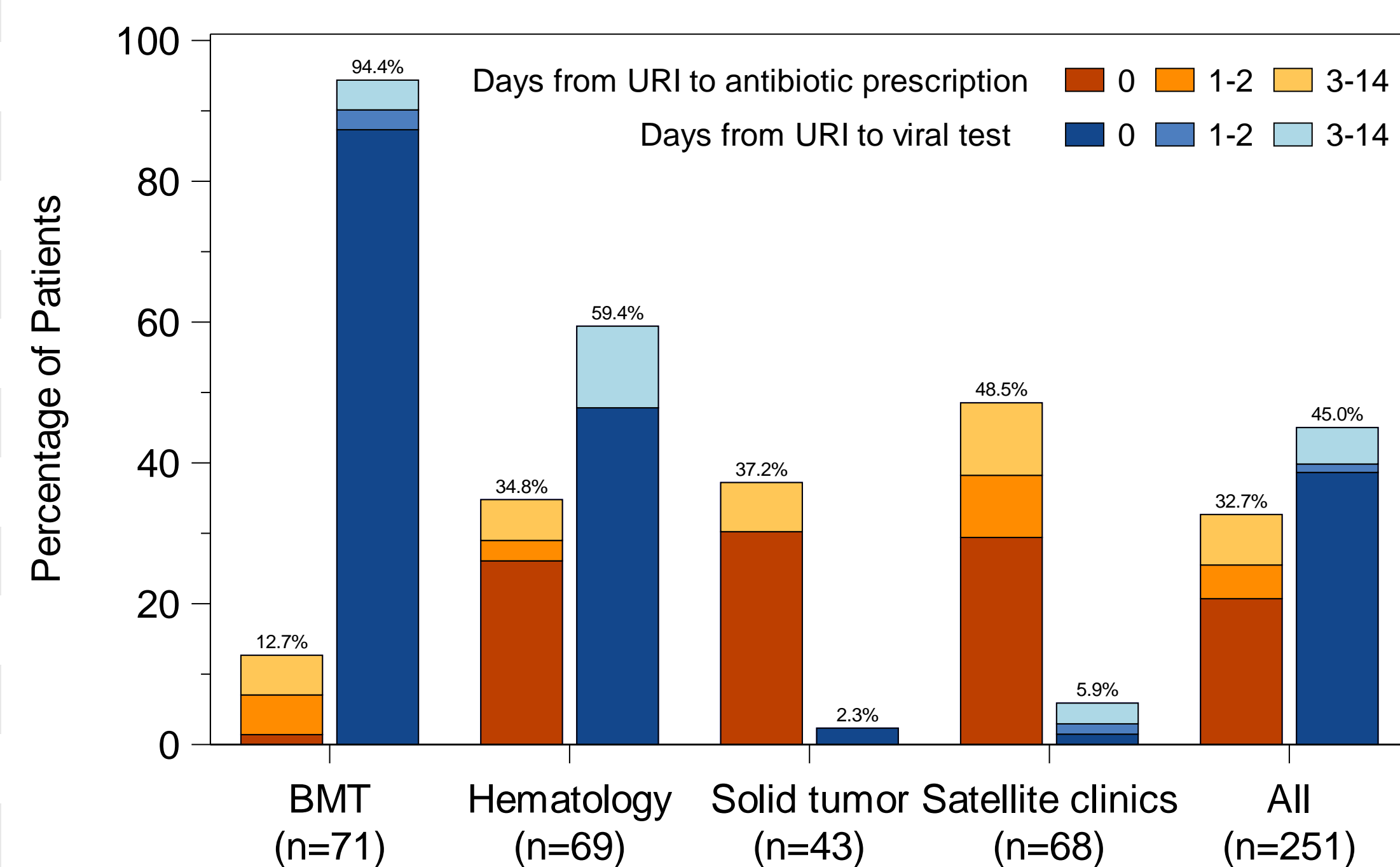


Figure 4. Respiratory Viruses Detected

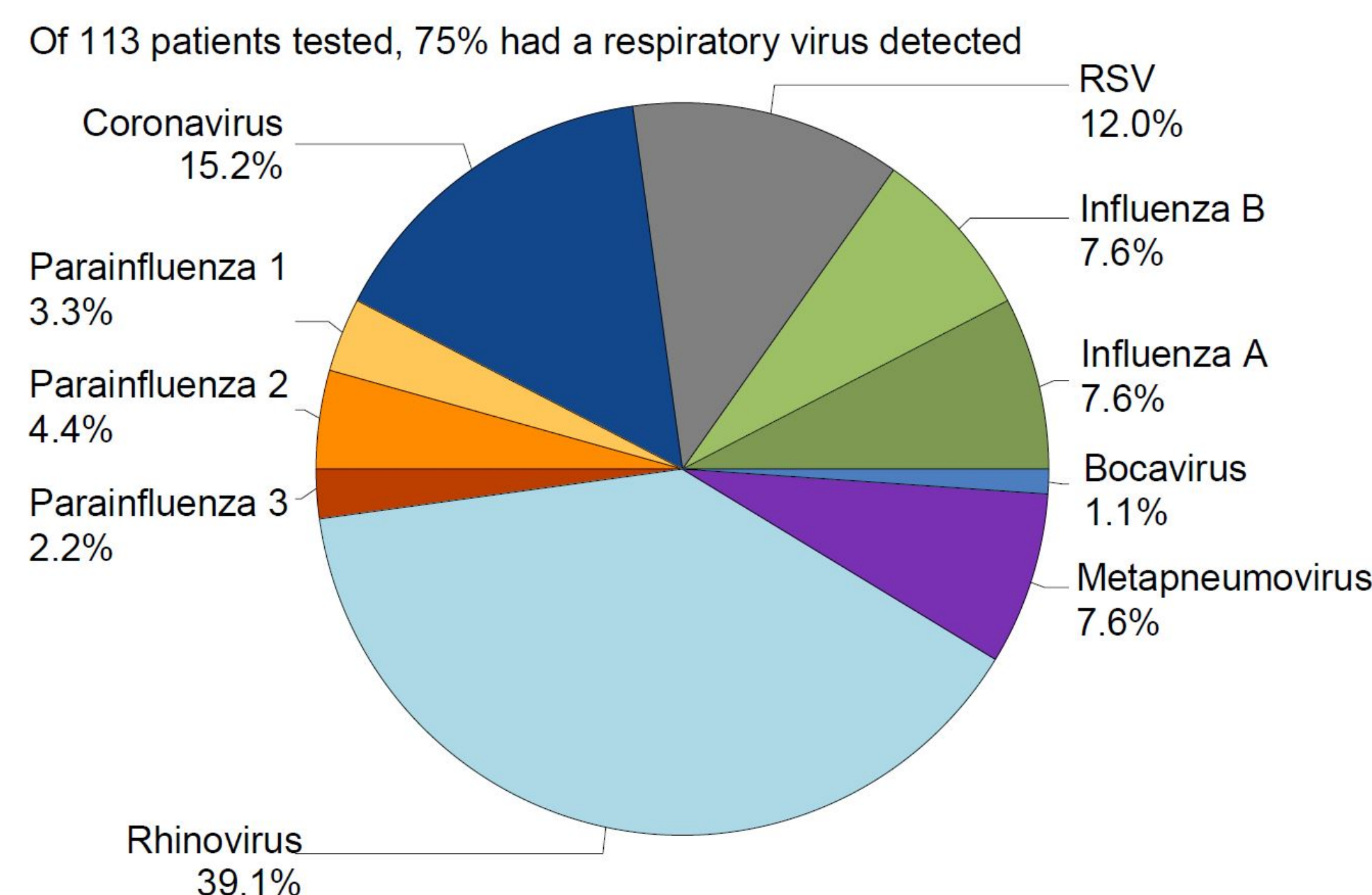


Figure 5. Prescribing Following Viral Test Results

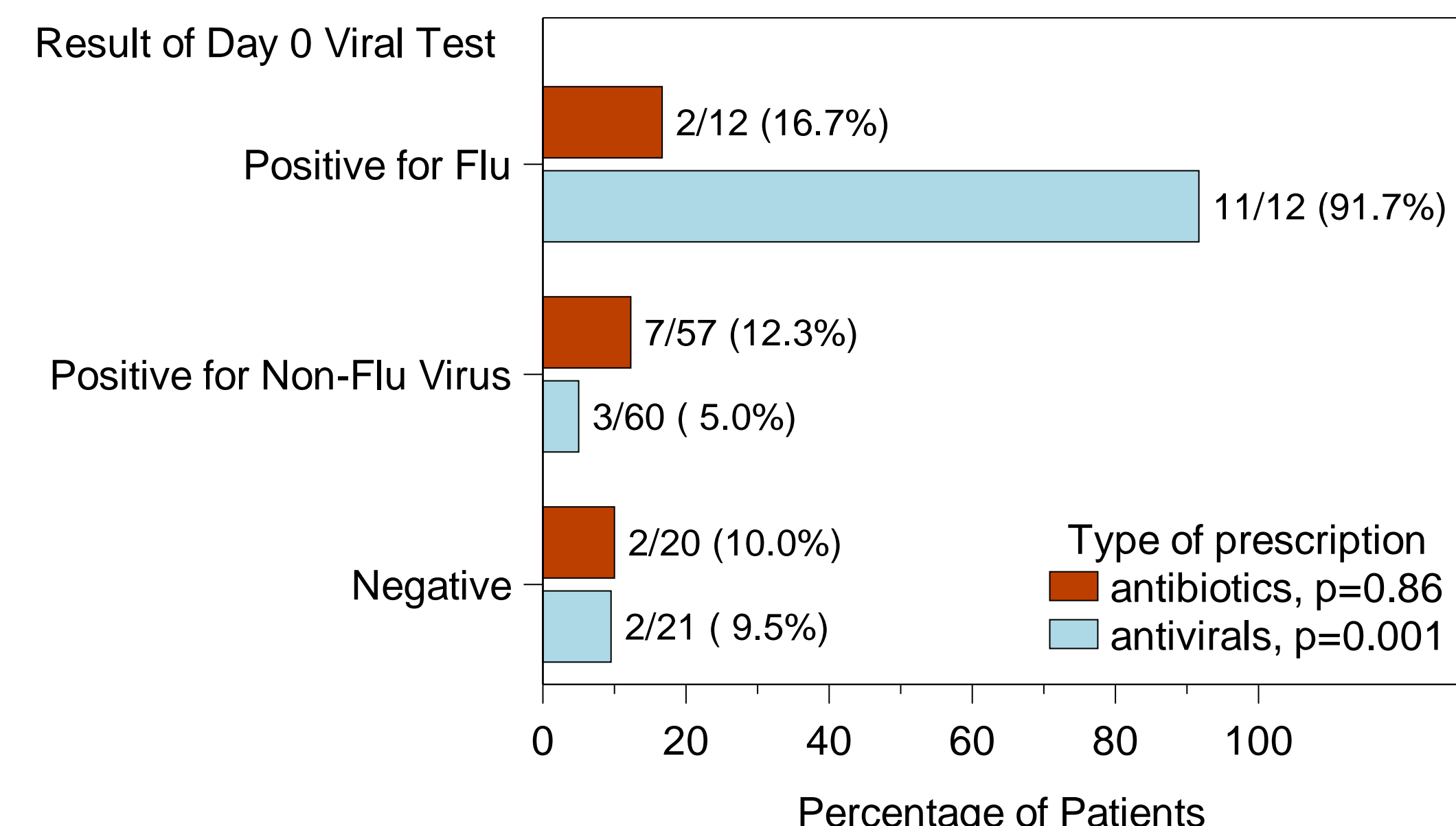


Figure 6. Univariable Associations with Antibiotic Prescribing

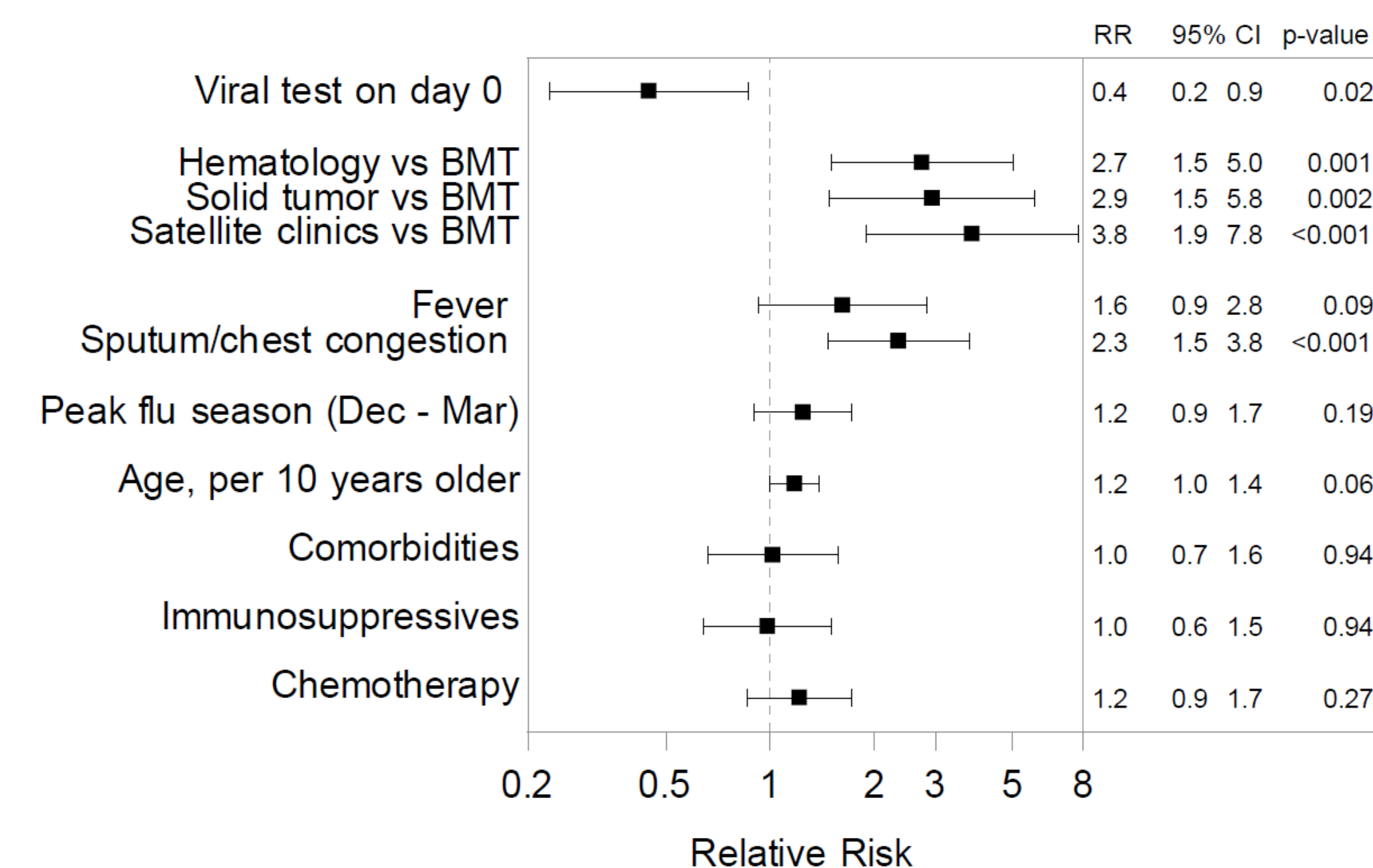
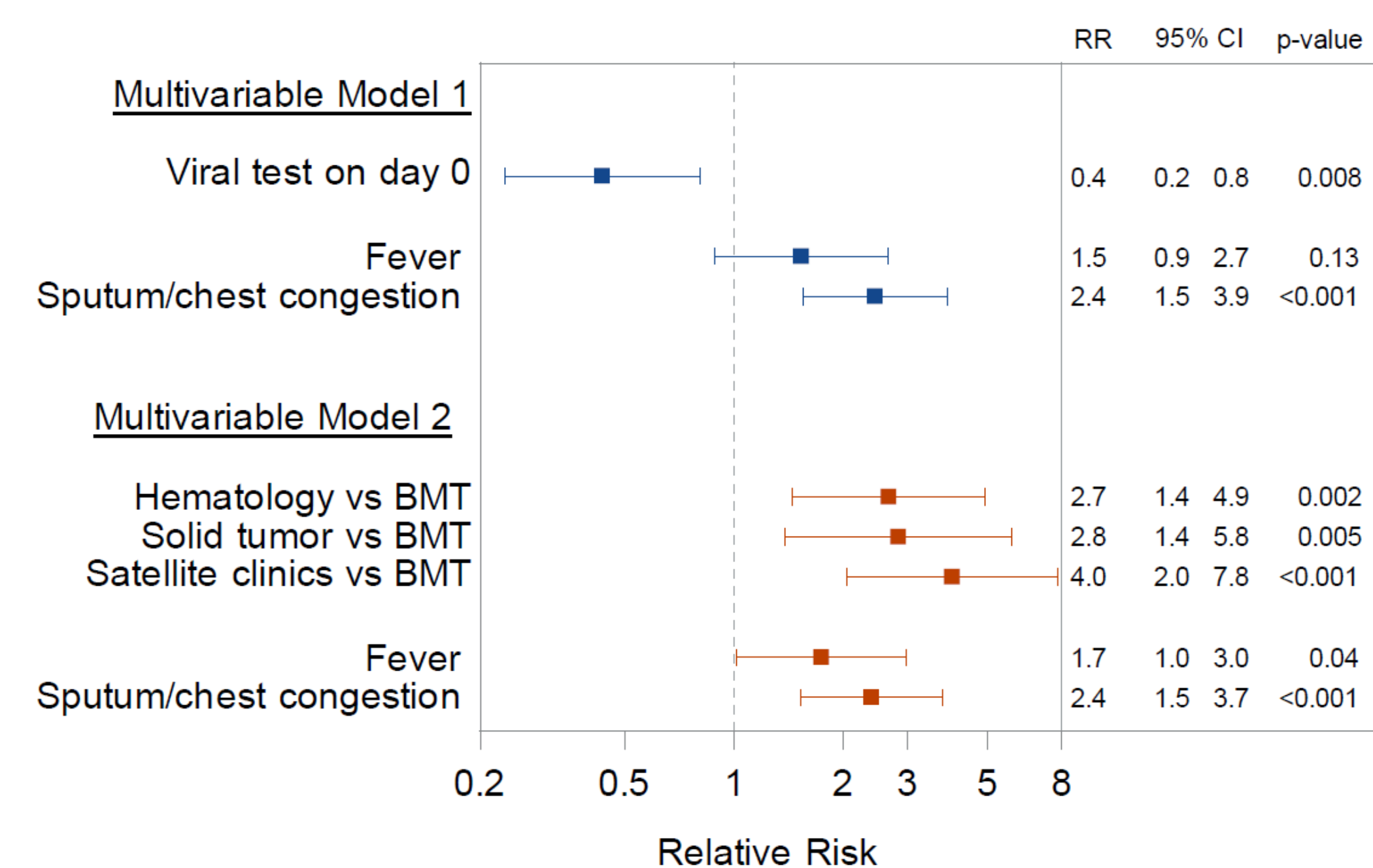


Figure 7. Multivariable Associations with Antibiotic Prescribing



Conclusions

- Antibiotics were prescribed in 1 of 3 oncology outpatients with URI, while viral etiologies were identified in 75% of the subset of patients tested
- Respiratory viral testing was associated with lower risk of antibiotic prescribing, though collinearity between clinical service and viral testing limited our ability to separate these effects
- It is important to further explore the role of viral testing in antibiotic prescribing for URI in outpatient oncology settings