APPENDIX

Table A1: List of Antibiotics Used to Construct Study's Dependent Variable

Description	Prescription		
Aminoglycosides	amikacin gentamicin	kanamycin streptomycin	tobramycin
Aminopenicillins	amoxicillin	ampicillin	
Antipseudomonal penicillins	piperacillin	ticarcillin	

Beta-lactamase inhibitors	amoxicillin-
	  clavulanate
	ampicillin-sulbactam
		piperacillin-
		  tazobactam
			ticarcillin-
			  clavulanate

First-generation cephalosporins	cefadroxil	cefazolin	cephalexin
Fourth-generation cephalosporins	cefepime		
Ketolides	telithromycin		
Lincomycin derivatives	clindamycin	lincomycin	

Macrolides	azithromycin
	clarithromycin
		erythromycin
		erythromycin
		  ethylsuccinate
			erythromycin
			  lactobionate
			erythromycin
			  stearate

Miscellaneous antibiotics	aztreonam
	chloramphenicol
	dalfopristin-
	  quinupristin
		daptomycin
		erythromycin-
		  sulfisoxazole
		linezolid
			metronidazole
			vancomycin

Natural penicillins	penicillin G
	  benzathine-procaine
	penicillin G
	  potassium
		penicillin G procaine
		penicillin G sodium
			penicillin V
			  potassium
			penicillin G
			  benzathine

Penicillinase resistant penicillins	dicloxacillin	nafcillin	oxacillin
Quinolones	ciprofloxacin gatifloxacin gemifloxacin	levofloxacin lomefloxacin moxifloxacin	norfloxacin ofloxacin sparfloxacin
Rifamycin derivatives	rifampin		
Second generation cephalosporin	cefaclor cefotetan	cefoxitin cefprozil	cefuroxime loracarbef
Sulfonamides	sulfadiazine sulfamethoxazole-trimethoprim	sulfisoxazole	
Tetracyclines	doxycycline	minocycline	tetracycline
Third generation cephalosporins	cefdinir cefditoren cefixime	cefotaxime cefpodoxime ceftazidime	ceftibuten ceftriaxone
Urinary anti-infectives	fosfomycin nitrofurantoin	nitrofurantoin macrocrystals- monohydrate trimethoprim	
	nitrofurantoin macrocrystals		

Source: Taken from HEDIS measure(13)

Table A2: Subset of Antibiotics Defined as "Broad Spectrum" for analyses

Description	Prescription		
Beta-lactamase inhibitors	amoxicillin-clavulanate		
Macrolides	azithromycin clarithromycin		
Quinolones	ciprofloxacin	levofloxacin	norfloxacin
	gatifloxacin	lomefloxacin	ofloxacin
	gemifloxacin	moxifloxacin	sparfloxacin
Second generation cephalosporin	cefaclor	cefoxitin	cefuroxime
	cefotetan	cefprozil	loracarbef
Third generation cephalosporins	cefdinir	cefotaxime	ceftibuten
	cefditoren	cefpodoxime	ceftriaxone
	cefixime	ceftazidime	

Table A3: Exclusion Criteria for Secondary Diagnoses Indicating Antibiotic Prescription

Diagnosis Description	ICD-9 Codes	Number Excluded
Nonsuppurative otitis media	381	0
	381.01	3
	381.1	0
	381.2	0
	381.3	0
	381.4	0
Suppurative otitis media	382	149
Acute sinusitis	461	31
Chronic sinusitis	473	119
Acute pharyngitis	462	132
Acute tonsillitis	463	12
Streptococcal sore throat	034.0	7
Pneumonia	481	0
	482	1
	483	0
	484	0
	485	0
	486	15
Bacterial infections	041	5
Urinary tract infections	590	0
	595	0
	597	0
	599.0	7
Acne	706.1	4
Emphysema among adults	492	3
Chronic bronchitis among adults	491	3

Table A4: Single-year GEE models for receipt of antibiotic prescription for acute bronchitis/URI visits

Variable		2006	2007	2008	2009	2010
Provider uses e-warning		0.76	0.97	0.89	0.77	0.70
Provider uses e-prescribing		2.53	1.25	0.83	0.89	1.80
Provider uses EMR		0.52	1.38	1.11	0.94	1.10
Provider specialty:	Pediatrics	*(Reference)*	*(Reference)*	*(Reference)*	*(Reference)*	*(Reference)*
	General/family medicine	3.58***	1.78	3.02***	1.58	1.72
	Other	3.69**	1.44	1.55	1.52	2.24*
Provider Office Type:	Private practice	*(Reference)*	*(Reference)*	*(Reference)*	*(Reference)*	*(Reference)*
	HMO	1.00	0.26	0.48	0.21	0.17*
	Other	0.79	0.91	0.74	1.00	0.93
Patient Insurance Type:	Private	*(Reference)*	*(Reference)*	*(Reference)*	*(Reference)*	*(Reference)*
	Medicare	1.06	0.66	1.50	0.64	0.85
	Medicaid	0.74	0.84	1.18	0.66	0.82
	Self-pay	0.92	0.77	2.14	1.44	1.27
	Other	0.72	0.97	0.50	1.01	0.67
Patient age:	0 – 4	0.91	0.70	0.59	0.64	.43**
	5 – 17	1.14	0.82	1.40	0.76	0.56
	18 – 64	*(Reference)*	*(Reference)*	*(Reference)*	*(Reference)*	*(Reference)*
	> 65	0.60	1.54	0.51	1.36	0.46
Patient race:	Non-Hispanic White	*(Reference)*	*(Reference)*	*(Reference)*	*(Reference)*	*(Reference)*
	Non-Hispanic Black	1.41	0.85	1.33	1.29	1.25
	Hispanic	0.69	0.80	0.66	0.94	0.94
	Other	0.85	0.60	0.76	0.21**	0.67
Patient chronic condition(s):	Asthma	1.01	1.27	0.62	0.85	0.69
	COPD	2.81***	3.46***	4.24***	1.89**	2.19**
Constant		0.17***	0.37**	0.34**	0.60	0.66

$* \ p < .05$

$** \ p < .01$

$*** \ p < .001$

Table A5: Odds Ratios from GEE model for receipt of antibiotic prescription, with e-warning/yearly interaction term

Variable		Odds Ratio
Provider uses e-warning		0.56*
Interaction Term: E-warning*Proportion of providers using e-warning in survey year		2.30
Provider uses e-prescribing		1.40*
Provider uses EMR		1.03
Provider specialty:	Pediatrics	*Reference*
	General/family medicine	2.03***
	Other	1.93***
Provider Office Type:	Private practice	*Reference*
	HMO	0.24**
	Other	0.89
Patient Insurance Type:	Private	*Reference*
	Medicare	0.96
	Medicaid	0.79*
	Self-pay	1.29
	Other	0.80
Patient age:	0 – 4	0.63***
	5 – 17	0.85
	18 – 64	*Reference*
	> 65	0.78
Patient race:	Non-Hispanic White	*Reference*
	Non-Hispanic Black	1.23
	Hispanic	0.81
	Other	0.54***
Patient chronic condition(s):	Asthma	0.87
	COPD	2.71***
Constant		0.41***

* p < .05
** p < .01
*** p < .001

Table A6: Odds Ratios from GEE model for receipt of Broad Spectrum Antibiotic Prescription for visits resulting in any antibiotic prescription

Variable		Odds Ratio
Provider uses e-warning		1.54
Provider uses e-prescribing		0.72
Provider uses EMR		1.03
Provider specialty:	Pediatrics	*Reference*
	General/family medicine	0.92
	Other	1.39
Provider Office Type:	Private practice	*Reference*
	HMO	0.50
	Other	0.60*
Patient Insurance Type:	Private	*Reference*
	Medicare	0.88
	Medicaid	1.03
	Self-pay	1.09
	Other	1.59
Patient age:	0 – 4	1.42
	5 – 17	0.78
	18 – 64	*Reference*
	> 65	2.03**
Patient race:	Non-Hispanic White	*Reference*
	Non-Hispanic Black	0.56 *
	Hispanic	0.43***
	Other	0.63
Patient chronic condition(s):	Asthma	0.90
	COPD	1.15
NAMCS Survey Year:	2006	*Reference*
	2007	1.30
	2008	1.39
	2009	1.28
	2010	1.47
Constant		0.25***

* p < .05
** p < .01
*** p < .001