



# Reducing Antibiotic Use in the Management of Upper Respiratory Infections in the Urgent Care Setting

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Carroll Hospital Center My Care Now Urgent Care Centers



# Setting



*My Care Now*



# Problem Statement

The lack of treatment guidelines at Carroll Hospital Center My Care Now urgent care centers has resulted in the inconsistent use of antibiotics among providers in the management of upper respiratory infections(URIs).



side effects

treatment failures

allergic reactions

overuse of antibiotics

costs

# Background & Significance

## National & Global Data



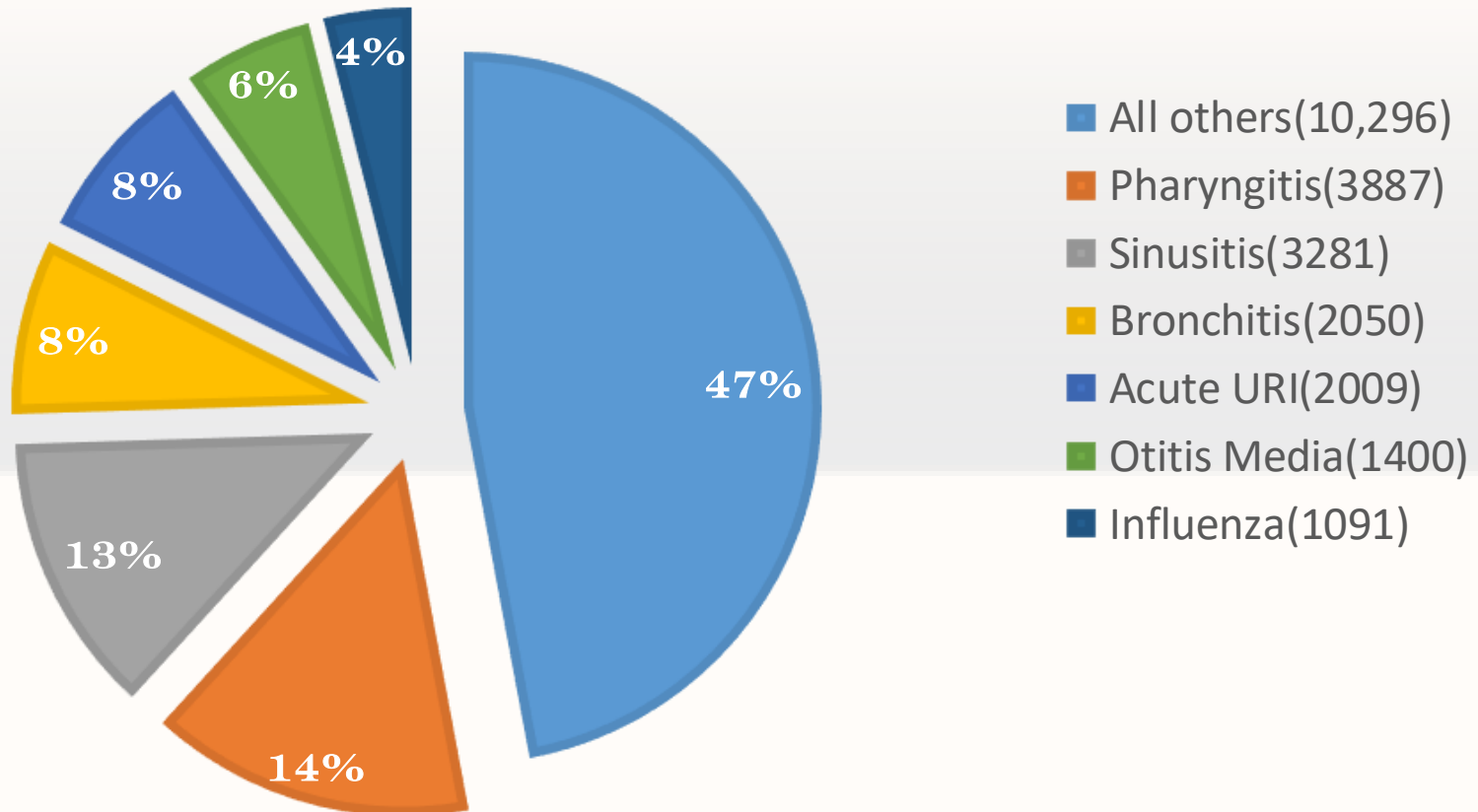
*"In everyone's lifetime, they will experience symptoms or be diagnosed with an upper respiratory infection"*  
Melissa J. Holley

- URIs = 25 million outpatient visits/year <sup>1</sup>
- 60% of URIs are treated with antibiotics despite etiology <sup>2</sup>
- Most URIs are caused by viruses <sup>3</sup>
- National guidelines are widely published and available by leaders in disease control and prevention
- National strategy for combating antibiotic resistant bacteria <sup>4</sup>
- Global antibiotic resistance is on the rise <sup>5</sup> [http://www.youtube.com/watch?v=IT\\_9zavkOSM](http://www.youtube.com/watch?v=IT_9zavkOSM)

1. Zoorob, R., Sidani, M. A., Fremont, R. D., & Kihlberg, C., 2012
2. Infectious Disease Society of America, 2013
3. CDC, 2014
4. [www.whitehouse.gov/.../pcast\\_carb\\_report\\_sept2014](http://www.whitehouse.gov/.../pcast_carb_report_sept2014)
5. World Health Organization, 2014

# Background & Significance

## Local Data





# Search of the Evidence

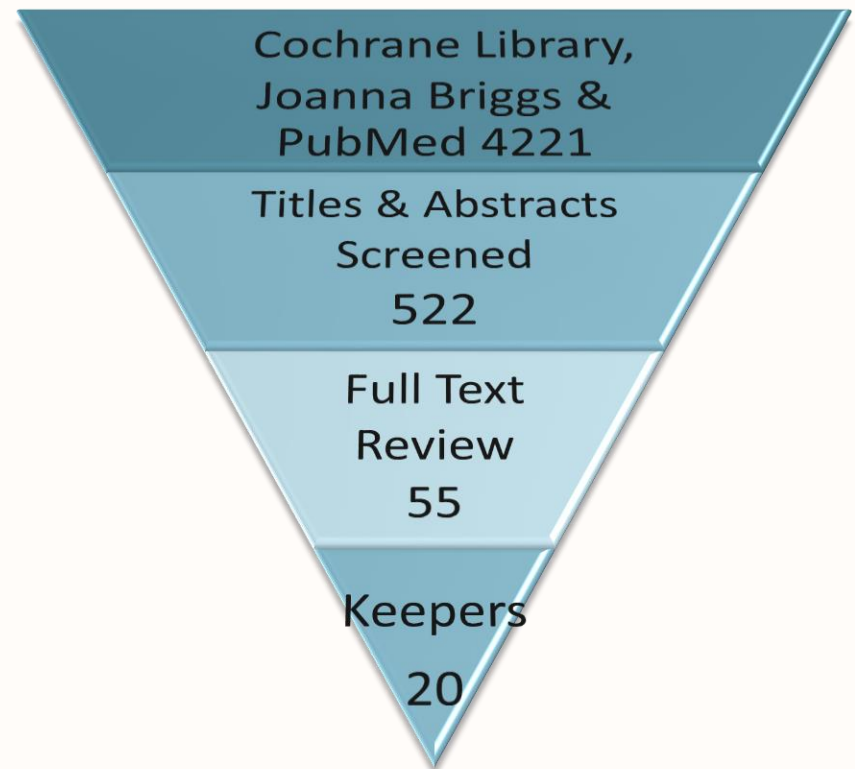


**Search terms:** URIs, antibiotics, urgent care, compliance

**Limits:** 2003-2013, English, Humans

**Inclusion Criteria:** RCT, NRCT, SRs, interventions targeting compliance with URI guideline compliance

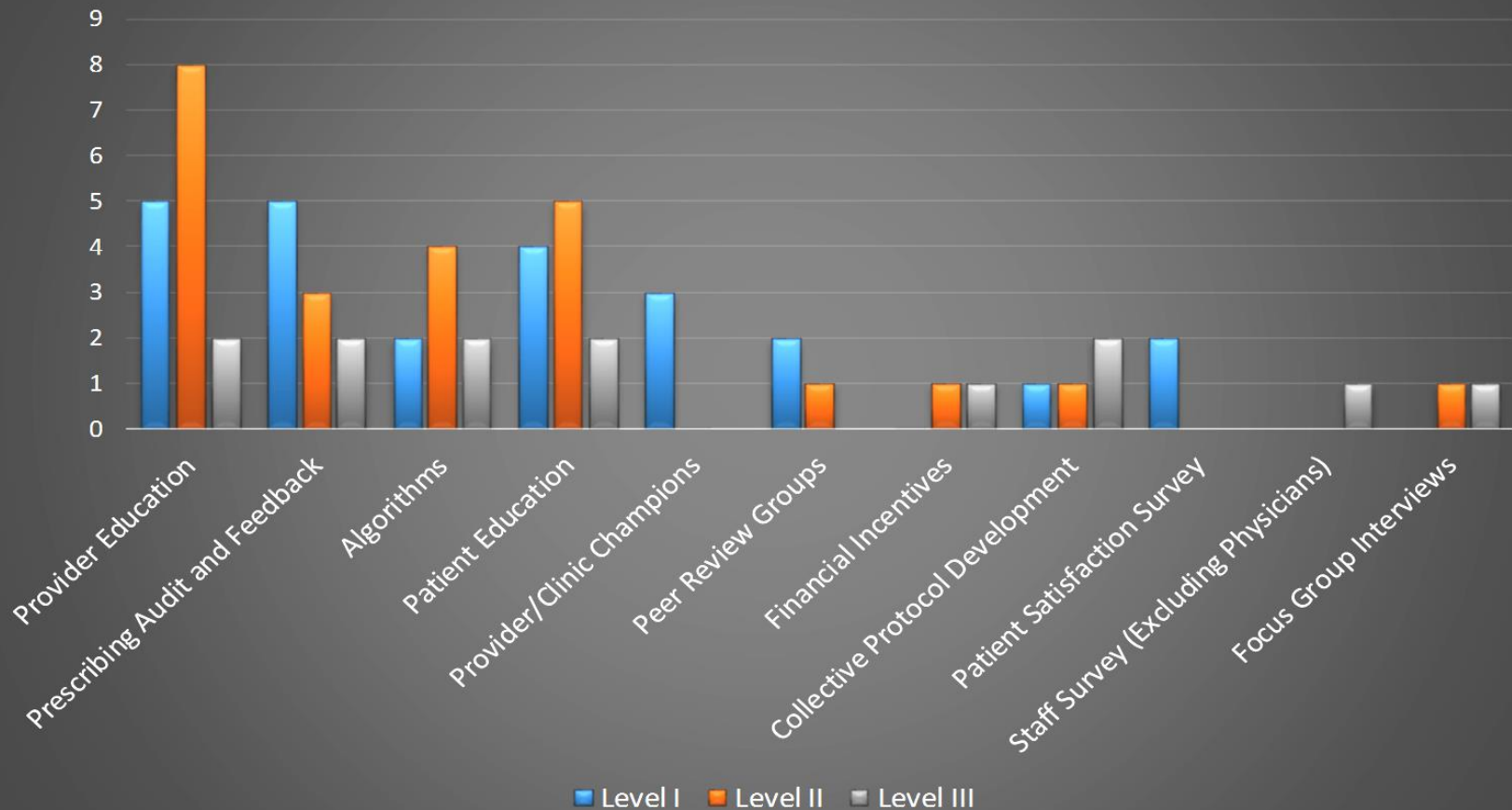
**Exclusion Criteria:** Study protocols, articles dealing with trainees, isolated to ethnic groups, inpatient settings, comorbid conditions, diagnostics, disease prevention



# Summary of the Evidence



Frequency of Intervention Type by Level



# Synthesis & Recommendations

## Level IA 7

- Provider education , Prescription feedback & audit , Decision algorithms , Physician champions ↓antibiotic use for URI's. <sup>(2,3,5)</sup>
- Individual interventions were ineffective<sup>(6)</sup>

## Level II A/B 9

Provider education + Prescription feedback & audit

- ↓ use of antibiotics for bronchitis <sup>(8)</sup> and sinusitis <sup>(9)</sup>
- ↓ use of broad spectrum antibiotics for sinusitis <sup>(9,12)</sup>
- Algorithms + other interventions :
  - ↓ broad spectrum antibiotic use in children <sup>(12, 14)</sup> & sinusitis <sup>(12)</sup>
  - Improved clinical guideline adherence for otitis media and pharyngitis in children <sup>(15)</sup>

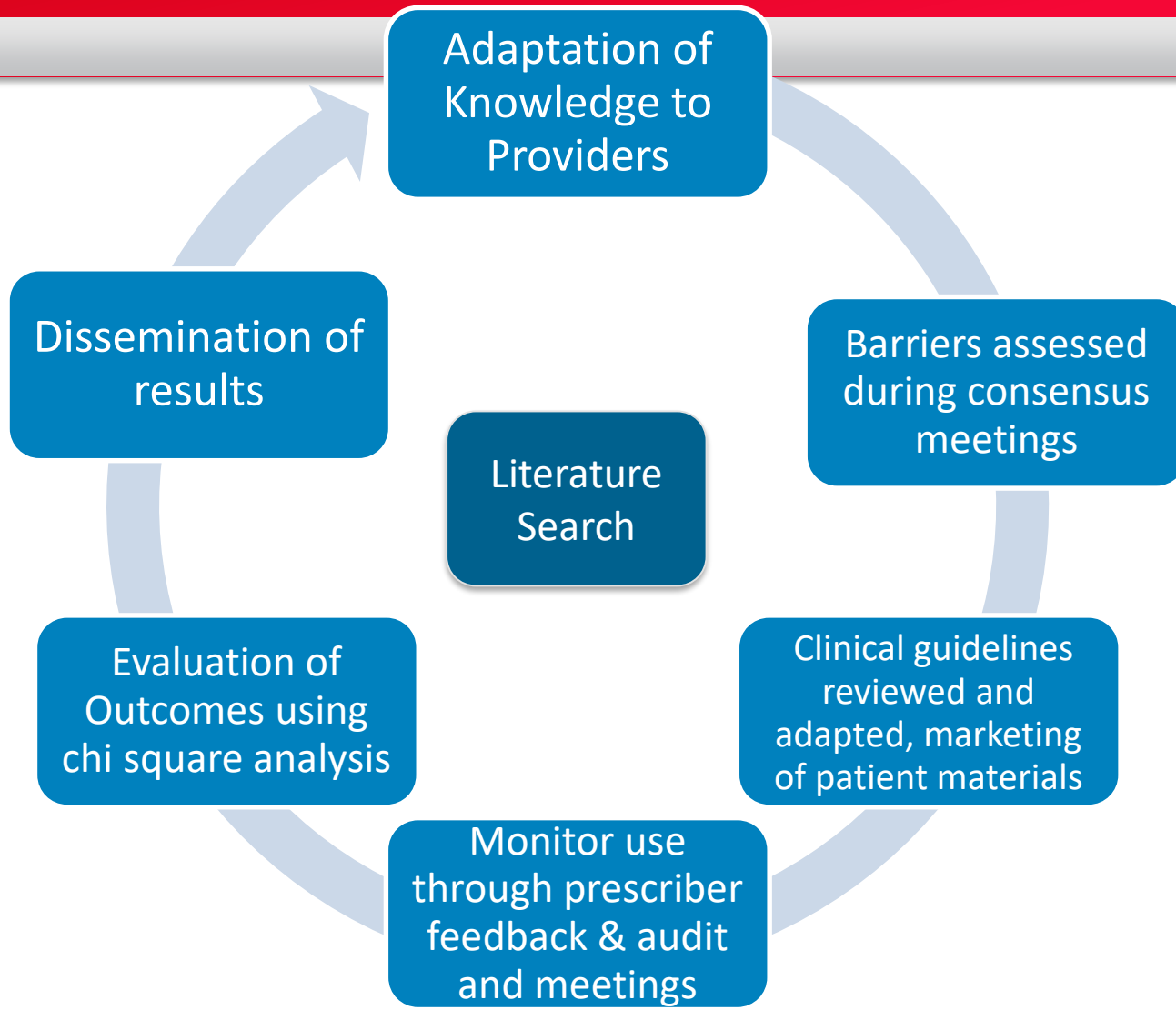
## Level III B 4

- Multi-faceted interventions improved URI treatment guideline adherence <sup>(17,20)</sup>, & reduced overall antibiotic prescribing for URIs <sup>(17,20)</sup>
- Effective leadership is essential to intervention success <sup>(18)</sup>



# Knowledge to Action Framework

## Application & Evaluation



# Purpose



*To integrate evidence based interventions into the management of URIs in the urgent care setting to improve patient outcomes and reduce the overuse of antibiotics*

# AIMS



*1. Decrease use of antibiotics in the management of URIs by 10%*

*2. Attain an 80% utilization rate of developed clinical pathways for URIs*

# Implementation/Execution

October 1, 2014 – February 1, 2015



**Baseline Data Collection (after IRB approval)**



**Provider Consensus Meetings (Monthly 1-hour meetings)**



**Clinical Guideline Review for Sinusitis, URI-NOS, & Bronchitis**

*\*Key component of KTA cycle*



**Clinical Pathway Development**

*\*used to translate guidelines locally*

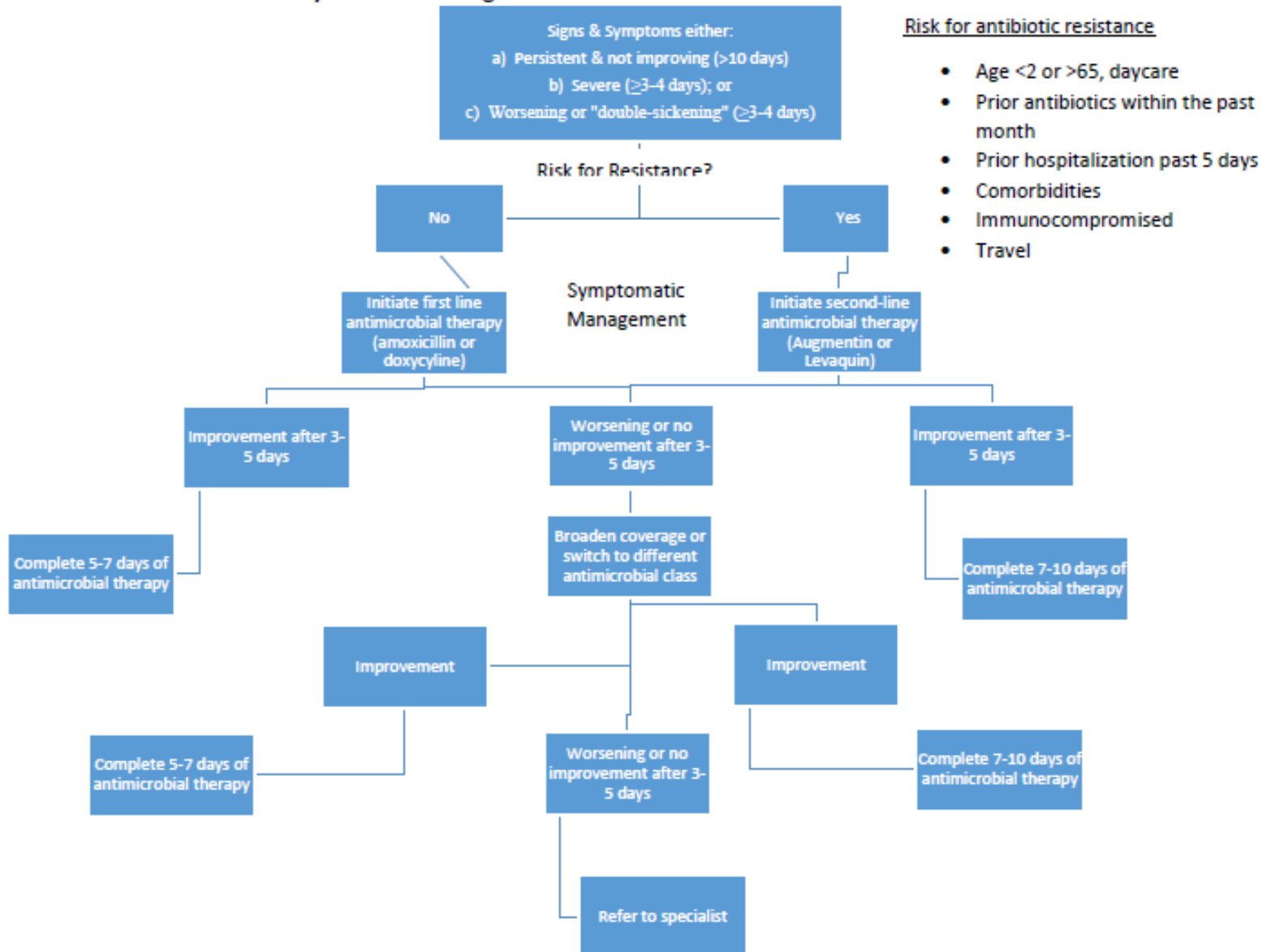


**Confidential Provider Feedback and Audit**



**Patient Education/Marketing**

## Clinical Pathway for the Management of Acute Bacterial Rhinosinusitis in Adults and Children



Adapted from the IDSA and the Centers for Disease Control and Prevention Guidelines for Acute Bacterial Sinusitis

Chow, et al., (2013) IDSA Clinical Practice Guideline for Acute Bacterial Rhinosinusitis in Children and Adults. *Clinical Infectious Diseases* 2012; 54(8): 1041-1045

CDC (2013). Get Smart: Know when antibiotics work. Available at <http://www.cdc.gov/getsmart/campaign-materials/info-sheets/adult-acute-bact-rhino.html>



# Marketing



Interviews

Articles

Brochures

Posters

Exit care instructions

Script Pads

Video casts

Social Media Posts



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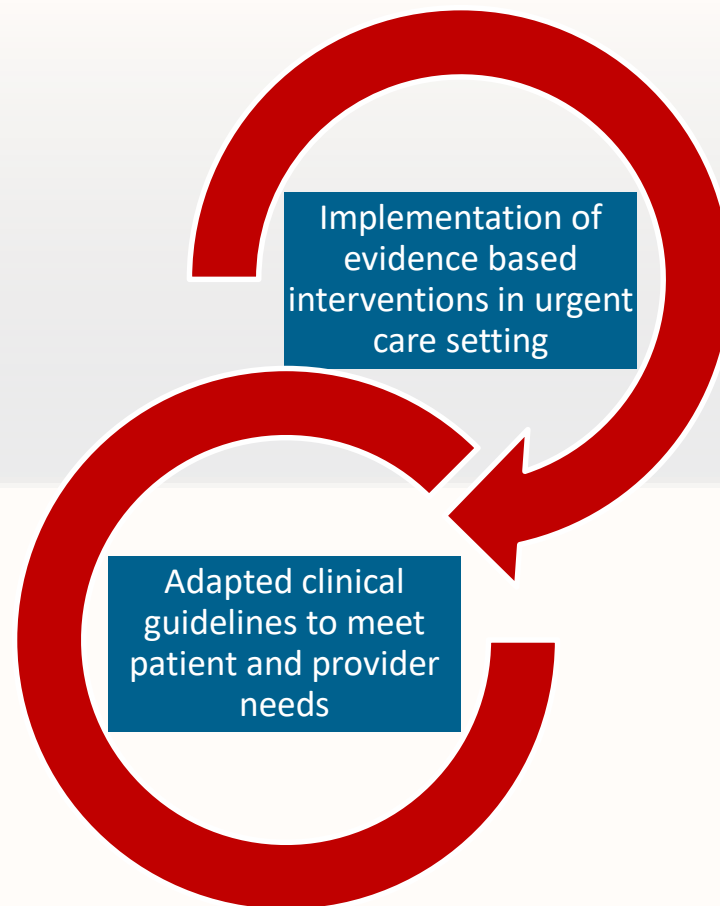
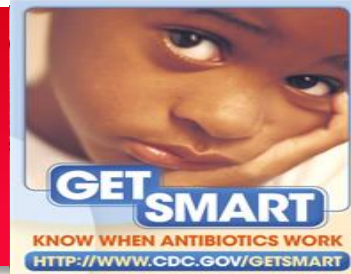
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# Innovation



# Measurement & Evaluation



Compare rate of abx  
prescribing for URIs  
between periods

- N pts with URIs given abx rx  
N of patients with URI dx  
during baseline/intervention  
period

Proportion visits  
with guideline  
adherence

- N pts with URIs txd w/guidelines  
N of pts with URI diagnoses  
during intervention

Prescriber Feedback  
and Audit

- # uri abx cases by provider  
all uri cases

# Power Analysis



The sample size calculation was based on a 12% reduction in antibiotic prescriptions for URIs in a studies conducted by Harris et al. (2003) & Jenkins et al. (2013).





# Data Collection



Obtain baseline data from Practice Velocity PVM System (Practice Management Software)



Report 17 from PVM for patients with the following ICD9 codes from 10/1/2012-2/1/2013 & 10/1/2014-2/1/2015

- 461.9 Acute Sinusitis
- 466.0 Acute Bronchitis
- 465.9 URI NOS
- 460 Acute Nasopharyngitis



Systematic randomization of the sample (every 3<sup>rd</sup> chart)  
Chart Review Audit Tool used to obtain demographic & clinical data

- De-identified data
- encounter number
- month and year of visit
- gender
- smoking status
- primary, secondary and tertiary diagnosis codes (ICD9 codes)
- provider type



SPSS 22 used to enter, code and analyze data

# Findings



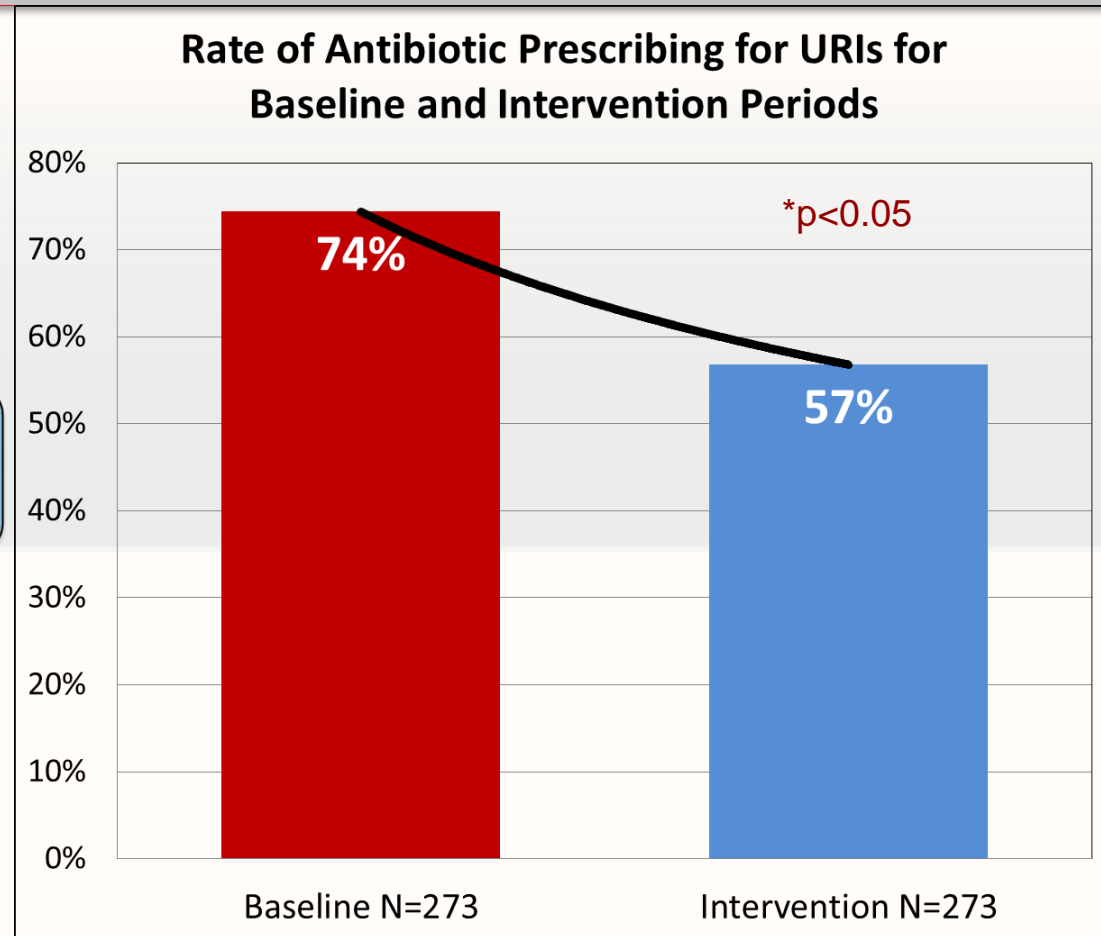
**Table 1. Demographic and Clinical Characteristics of Urgent Care URI Patient Encounters During Project Periods**

Demographics	Baseline, n=273	Intervention, n=273	p value <sup>a</sup>
Mean Age, years (range)	34 (0-85)	36 (0-87)	0.940
Gender, No. (%)			0.929
Female	178 (65%)	176 (65%)	
Male	95 (35%)	97 (36%)	
Clinical Data	Baseline, n=273	Intervention, n=273	p value <sup>a</sup>
Diagnosis, No. of cases. (%)			<0.000
Bronchitis	82 (30%)	4 (2%)	
Nasopharyngitis	22 (8%)	4 (2%)	
Sinusitis	96 (35%)	158 (58%)	
URI	107 (39%)	112 (41%)	
Provider Type, No. (%)			<0.000
Physician	138 (50%)	145 (53%)	
Nurse Practitioner	108 (40%)	61 (22%)	
Physician Assistant	27 (10%)	67 (25%)	
Smoking Status, No. (%)			0.024
Non smoker	237 (87%)	253 (93%)	
Smoker	36 (13%)	20 (7%)	

<sup>a</sup>t-test (age),  $\chi^2$  (categorical variables)

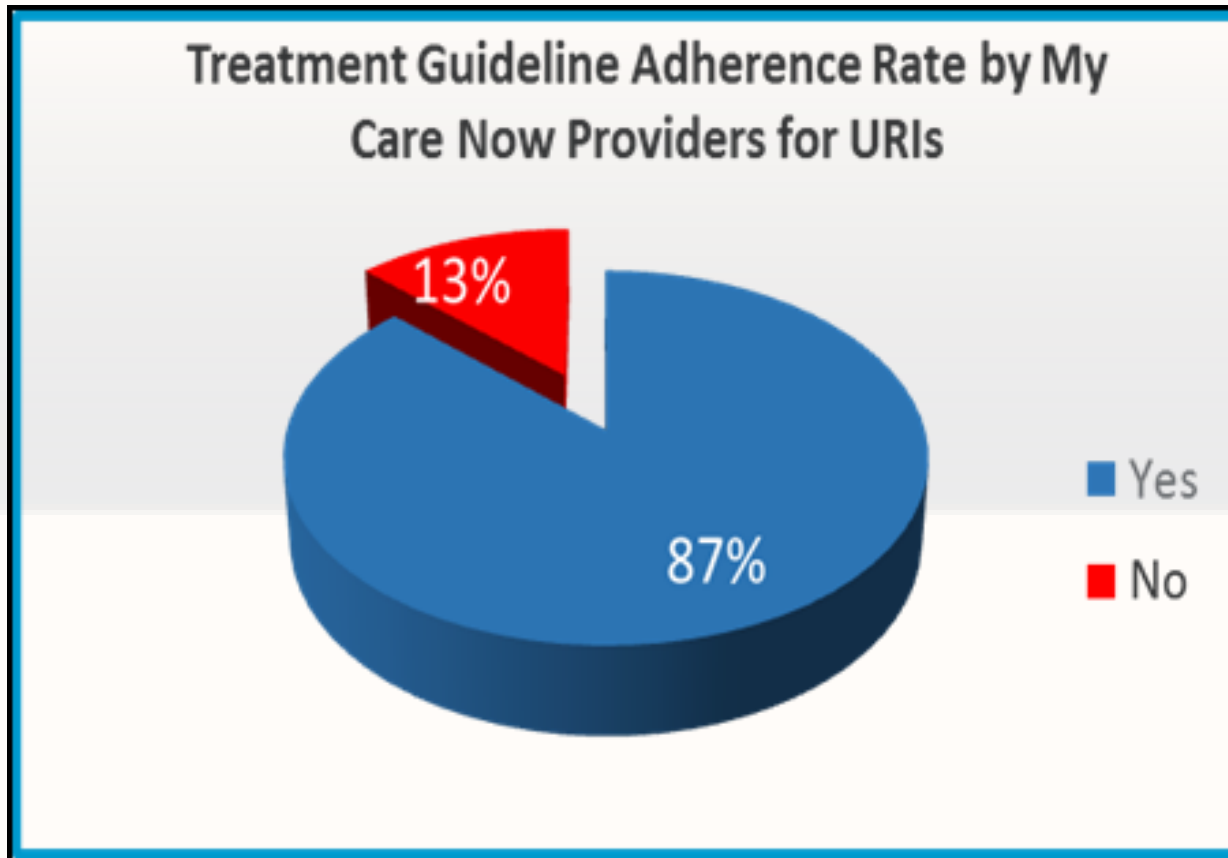
# Rate of Antibiotic Prescribing....

Using  $\chi^2$ , we appreciated a statistically significant change ( $p < 0.05$ ) in the proportion of patients prescribed an antibiotic for URIs as a result of the intervention (155/273 or 56.8%) in comparison to the baseline period (203/273 or 74.4%)



Graph 1. Bar chart demonstrating rates of antibiotic prescribing for URI between periods

# Rate of Guideline Adherence for URIs.....



Graph 2. Pie chart demonstrating rates of guideline adherence to URI guidelines during the intervention.

# Overall Summary of Results



We appreciated a modest, statistically significant (24%) decrease in the rate of antibiotic prescribing among the urgent care providers with our intervention

Buy in from the providers was evidenced through the attainment of an 87% rate of adherence to treatment guidelines.

Logistic regression confirmed there was a reduction in the rate of antibiotic prescribing as a result of the intervention after controlling for diagnosis type, provider type and smoking status



# Limitations



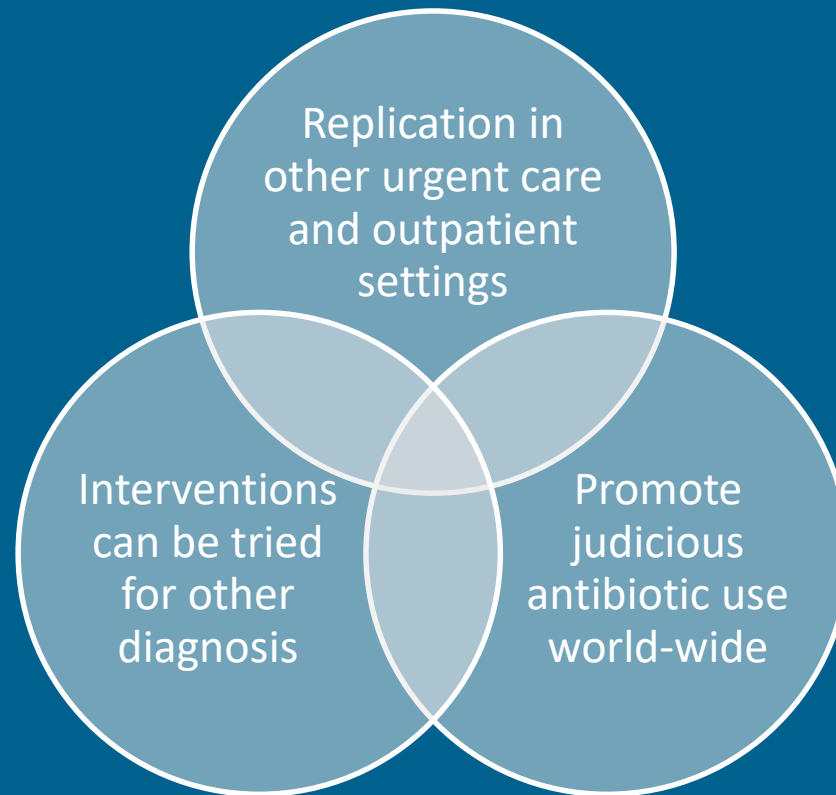
Changes in providers between periods

Hawthorne effect

Unable to determine effects of individual components of intervention

Delays in IRB approval delayed data collection until December 2014.

# Implications for Practice



# Recommendations



All providers  
should  
promote the  
judicious use  
of antibiotics

Sustainability  
of results

Disseminate  
findings

**THANK YOU!**

# References



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<http://www.cdc.gov/getsmart/week/promotional-materials/graphics.html>

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