

# Antimicrobial Stewardship: Optimizing Clinical Outcomes through Computerized Clinical Decision Support

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## Statement of the Problem

Improper use of antibiotics resulting in an increase in drug-resistant bacteria is a growing health problem. ThedaCare has identified antimicrobial stewardship as a system wide priority; however the outpatient setting has lacked interventions to combat this growing health crisis. In a recent chart review prior to the start of this implementation project, it was found that out of 165 patients seen in a one month time frame with a diagnosis of acute bacterial rhinosinusitis (ABRS) or acute viral rhinosinusitis (AVRS), 30% were diagnosed inappropriately, 68% received antibiotic therapy, of which 20% received azithromycin without clinical justification

## Clinical Question

In patients presenting with an acute upper respiratory infection (ARI), how will implementation of clinical decision support within the EPIC SmartSet affect prescribing patterns and antimicrobial stewardship of the FastCare providers during a one month period?



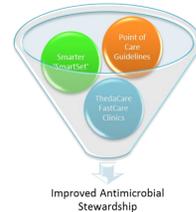
## Critical Appraisal of Evidence

- ◆ Ranji et al (2008) noted interventions to decrease prescriptions by 25% without compromise in clinical outcomes or patient satisfaction
- ◆ Bright et al (2012) showed evidence to support Clinical Decision Support Systems (CDSSs)
- ◆ Grimshaw and Russell (1993) found that guideline implementation strategies at the time and place of consultation are most effective



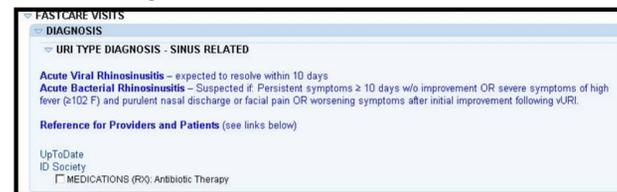
## Implementation

- ◆ Clinical decision support, based on IDSA/CDC current guidelines was implemented into the Smartset used by the FastCare clinics to be used at the point of care
- ◆ ABRS and AVRS were the selected diagnosis for an age range of 18 months to adult
- ◆ Providers educated on new Smartset



## EMR Two-Step Process

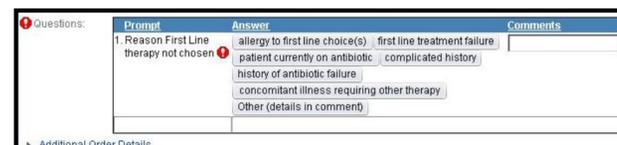
**Step 1:** The practitioner enters the EMR for a patient with a chief complaint of an ARI, a Smartset opens where the appropriate diagnosis can be selected  
⇒ Hyperlinks are provided accessing current IDSA/CDC guidelines for ABRS and AVRS



**Step 2:** Selection of first-line treatment (ABRS)



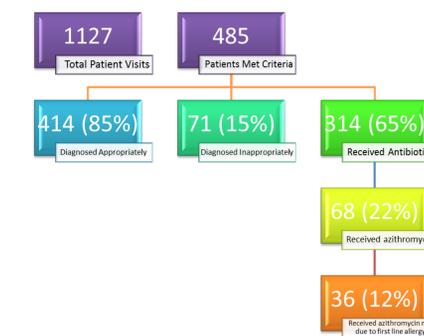
Second-line choices require a reason



## Outcomes

- ◆ 1,127 patient visits were manually reviewed during the one-month period that followed the intervention
- ◆ A Chi-square test was performed on the following parameters:

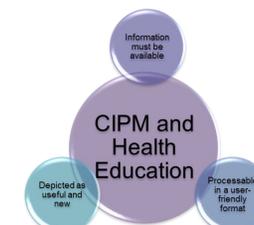
⇒ Patients that were appropriately vs. inappropriately diagnosed based on the guidelines  
⇒ Patients that received antibiotics vs. patients that did not  
⇒ Patients that received azithromycin vs. patients that did not receive azithromycin



- ◆ 2 of the 3 were statistically significant

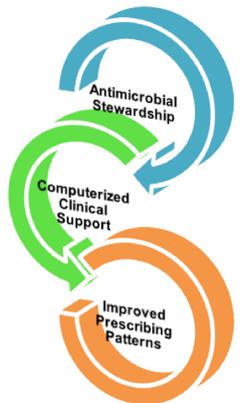
## Conceptual Framework

- ◆ Based on the Consumer Information Processing Model (CIPM)
- ◆ Portrays the healthcare provider as a 'consumer of information'
- ◆ Individuals are limited to how much information they can process
- ◆ Individuals combine segments of information into "chunks" and make decision rules or heuristics
- ◆ Information designed for the target population should be strategically placed (Campbell, 2001)



## Conclusion/Implications to Clinical Practice

- ◆ Implementation of a CDSS increases the accuracy of ABRS/AVRS diagnosis
- ◆ Effects can be realized through the increased appropriateness of antibiotic prescriptions based on current guidelines
- ◆ Decrease of inappropriate antibiotics such as azithromycin for ABRS and AVRS
- ◆ Can be used in conjunction with an antimicrobial stewardship program
- ◆ Overall prescribing patterns are affected by guideline information provided at the point of care
- ◆ Can be adapted to other diagnosis for use that extends into the primary care clinics
- ◆ Point of care patient/provider education is beneficial to reduce the number of inappropriately prescribed antibiotics
- ◆ Will aid in slowing antimicrobial resistance
- ◆ Stepping stone to encouraging other proactive approaches to antimicrobial prescribing



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