Improving Adherence to Clinical Practice Guidelines for the Treatment of Acute Otitis Media in Pediatric Patients

JESSICA M. CRANDALL, MSN, ARNP-FP-BC

CREIGHTON UNIVERSITY, COLLEGE OF NURSING

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- Chair - Dr. Misty Schwartz, Ph.D., RN
- Project Mentor- Dr. Cathy Carrico, DNP, ARNP-NP
- Clinical Mentor - Tessa Sandel, MSN, ARNP-FNP-BC

Learning Objectives

- Identify the importance of clinically guided management of Acute Otitis Media (AOM) with the use of an algorithm
- Identify how the quality improvement (QI) project of the modified clinical practice algorithm improved care in the clinical setting
- Discuss the importance of sustainability when implementing the algorithm.

Financial Disclosure

- No Financial Disclosures

Introduction

- AOM is the **second most common pediatric diagnosis** seen in outpatient settings.
- **Approx. 60%** of children will experience one or more episodes of acute otitis media (AOM) by age 3 and **80%** in their lifetime[1]
  - Lead to conductive hearing loss, speech and language delays, and adverse effects from medications[1]
- Importance of Antibiotic Stewardship as NP in rural Iowa
- Historically many of the patients received antibiotics whether they needed them or not, which led to antibiotic-seeking culture.
  - Caregivers unaware of guidelines for the management of AOM
- Clinical guideline algorithm currently not utilized by providers as they were unaware of it

Significance

- **Note that Management of AOM is a significant problem:**
  - The American Academy of Pediatrics (AAP)
  - American Academy of Family Physicians (AAFP)
  - American Academy of Otolaryngology (AAO)
- **AAP Recommendations:**
  - Children **under the age of 2 years**:
    - Treated with antibiotics
  - Children **2 years of age and older**
    - Refrain from antibiotic use for 48-72 hours pending assessment and symptoms.
      - Initial treatment for AOM is high-dose amoxicillin for 5-10 days[4]
- ***Clinical guidelines help combat AOM complications while achieving superior patient outcomes and decreasing healthcare costs[3]***

Clinical Problem

- Clinic providers not following clinical practice guidelines as they were unaware

- Inappropriate management of Acute otitis media (AOM) taking place in Urgent Care and Emergency Department

Available Knowledge

- Providers must have expert knowledge of the diagnosis of AOM to better manage the patient.
- Providing antibiotics when deemed necessary can greatly benefit the patient, however, the benefit needs to outweigh the risk based on assessment and diagnosis.
- The importance of accurate diagnosis of AOM along with appropriate and effective treatment options by following current clinical guidelines to aid in the reduction of antibiotic prescriptions on patients two years of age and older with mild symptoms[6].
- Studies noted[6,7] that education in multiple forms and easy-to-follow algorithms aided in the adherence to clinical guidelines.
  - Education needs to be presented more than a single event with updates, when necessary, to ensure continuation and adherence to interventions.

Kurt Lewin's 3 Stages of Change Model

- Lewin's Three-Step Model of Planned Change (2014) can be applied to this QI project. This model is composed of three main steps, unfreeze, change, freeze[5]

- The purpose of this three-step model is to provide an exceptional approach to quality improvement by assisting in the overall change of individuals. Change must be accepted and embraced by others for it to be effective. [5]

Unfreeze

- Introduction of change
- Ready to make a change

Change

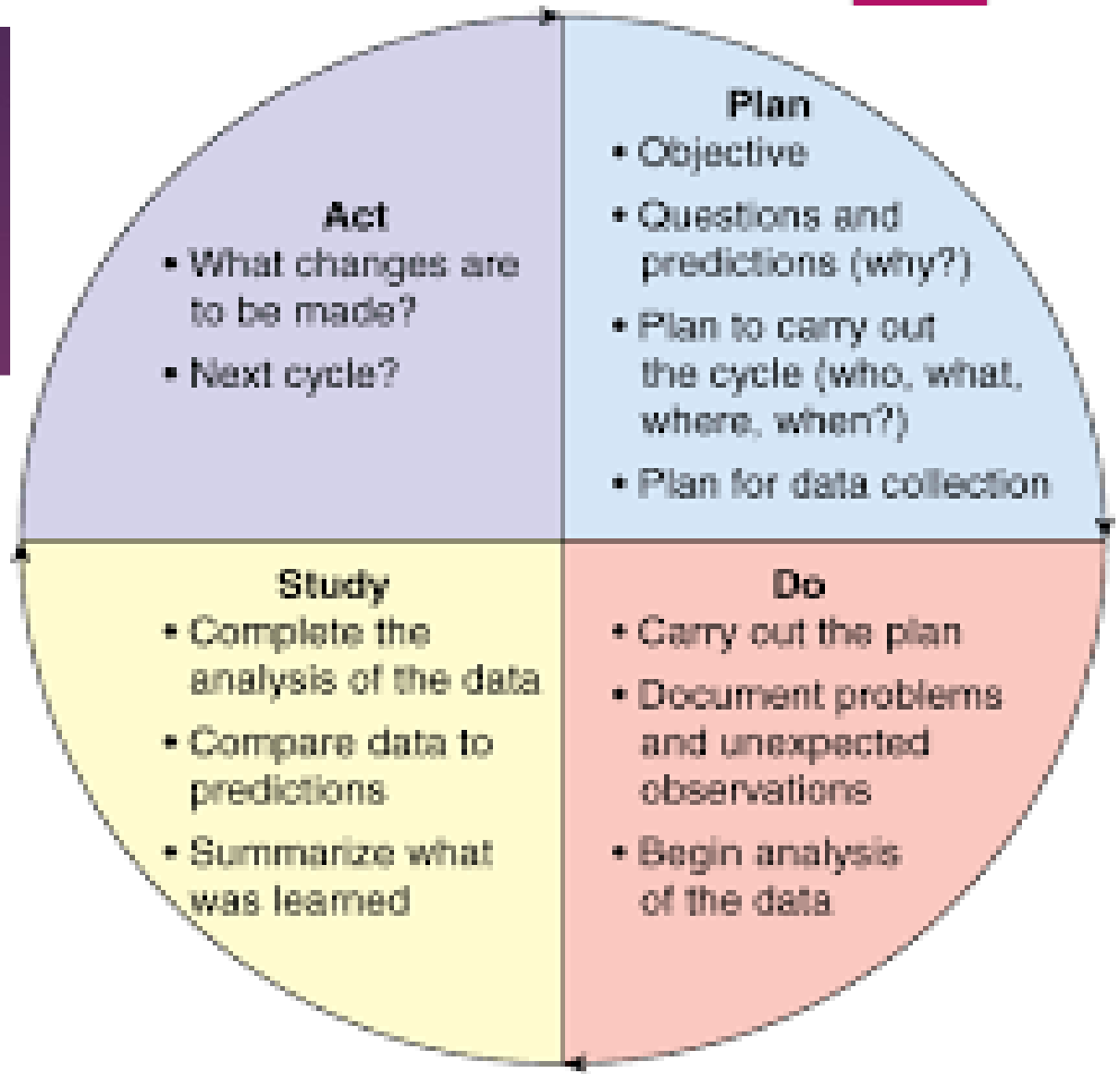
- Implement the change
- Take on new responsivities

Refreeze

- Standardization throughout the organization
- Made a permanent part of the process

Plan-Do-Study-Act (PDSA) Methodology

- Widely utilized by the Institute for Healthcare Improvements (IHI) for quality improvement projects
- Aids in the documentation of change and recognizing necessary modifications
- Utilized throughout this project



Source: Pidcoke S, Ross JJ, Dressler DD, Brotman DJ, Ginsberg JS: Principles and Practice of Hospital Medicine: www.accessmedicine.com

Purpose

- Improve the management of pediatric patients ages 2 to 18 years diagnosed with AOM by the modification of clinical practice guidelines and increasing the knowledge and awareness of providers.

Purpose - Objectives

- Objectives:
  - Modified the current evidenced-based algorithm for the management of AOM for children ages 2 and 18 years.
  - Provided clinicians with a revised up-to-date clinical algorithm and education on the diagnosis, treatment, and management of AOM for pediatric patients.

Purpose - Outcomes

- Outcomes
  - Increase adherence to clinical practice guideline algorithm for management of AOM
  - All aspects of the algorithm documented appropriately in the patient's chart 80% of the time
  - Unnecessary antibiotic management to decrease by 50%

Methods

- QI Design
- Setting:
  - Greater Regional Health, a rural UC and ED in Creston, Iowa
  - Pediatric patients between the ages of 2 and 18 years of age
- Population:
  - All providers in UC and ED were included
    - 9 Providers- 1 MD, 1 DO, and 7 ARNP's
- Stakeholders:
  - DNP Supervisors
  - Urgent Care and Emergency Department Director
  - Antibiotic Stewardship Committee
  - Project Leader
  - Providers

Methods

Interventions:

- Educated Providers
  - Emailed PowerPoint – Current algorithm with modifications, new "watch and wait" algorithm, current recommendations
  - Handouts – Same as above along with CDC recommendations on flyers
  - Follow-up in-person weekly post-education – to providers
- Educated caregivers/Patients
  - Flyers and Handouts

Methods

- Measures:

  - EPIC EMR
  - Pre and Post Intervention chart audit (August - October)
    - To determine % of providers utilizing the current clinical practice algorithm

Accessible version: https://www.cdc.gov/antibiotic-use/ear-infection.html

Preventing and Treating Ear Infections

Is your child's ear hurting? It could be an ear infection. Children are more likely than adults to get ear infections. Talk to your child's doctor about the best treatment.

Some ear infections, such as middle ear infections, need antibiotic treatment, but many can get better on their own without antibiotics.

What is an ear infection?

There are different types of ear infections. **Middle ear infection** (acute otitis media) is an infection in the middle ear.

Another condition that affects the middle ear is called **otitis media with effusion.** It occurs when fluid builds up in the middle ear without being infected and without causing fever, ear pain, or pus buildup in the middle ear.

When the outer ear canal is infected, the condition is called "swimmer's ear," which is different from a middle ear infection.

Causes

Middle ear infections can be caused by:

- Bacteria, like *Streptococcus pneumoniae* and *Haemophilus influenzae* (nontypeable) —the two most common bacterial causes
- Viruses, like those that cause colds or flu

Symptoms

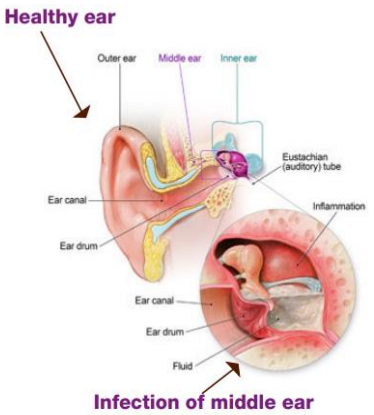
Common symptoms of middle ear infection in children can include:

- Ear pain
- Fever
- Fussiness or irritability
- Rubbing or tugging at an ear
- Difficulty sleeping

When to Seek Medical Care

See a doctor if your child has:

- A fever of 102.2°F (39°C) or higher
- Pus, discharge, or fluid coming from the ear
- Worsening symptoms
- Symptoms of a middle ear infection that last for more than 2–3 days
- Hearing loss



See a doctor right away if your child is younger than 3 months old and has a fever greater than 100.4 °F (38 °C).

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

CDC

CS322870-B

Preventing and Treating Ear Infections

Treatment

A doctor will determine what type of illness your child has by asking about symptoms and doing a physical examination. Your doctor can make the diagnosis of a middle ear infection by looking inside your child's ear to examine the eardrum and see if there is pus in the middle ear.

Antibiotics are often not needed for middle ear infections because the body's immune system can fight off the infection on its own. But sometimes antibiotics, such as amoxicillin, are needed to treat infants, severe cases, or cases that last longer than 2–3 days.

For mild cases of middle ear infection, your doctor might recommend **watchful waiting** or **delayed antibiotic prescribing**.

- **Watchful waiting:** Your child's doctor may suggest watching and waiting to see if your child needs antibiotics. This gives the immune system time to fight off the infection. If your child doesn't feel better after 2–3 days of rest, extra fluids, and pain relievers, the doctor will write a prescription for an antibiotic.
- **Delayed prescribing:** Your child's doctor may give an antibiotic prescription but will suggest that you wait 2–3 days to see if your child is still sick before filling it.

How to Feel Better

Some ways to feel better—whether or not antibiotics are needed for an ear infection:

- Rest.
- Drink extra water or other fluids.
- Take acetaminophen or ibuprofen to relieve pain or fever. Ask your doctor or pharmacist what medications are safe for your child to take and what dose to give your child.

Over-the-Counter Medicine and Children

Be careful about giving over-the-counter medicines to children. **Not all over-the-counter medicines are recommended for children of certain ages.**

- Pain relievers:
  - Children younger than 6 months: only give acetaminophen.
  - Children 6 months or older: it is OK to give acetaminophen or ibuprofen.
  - Never give aspirin to children because it can cause Reye's syndrome, a rare but very serious illness that harms the liver and brain.

Be sure to ask your doctor or pharmacist about the right dosage of over-the-counter medicines for your child's age and size. Also, tell your child's doctor and pharmacist about all the prescription and over-the-counter medicines they are taking.

Prevention

You can help prevent ear infections by doing your best to stay healthy and keep others healthy.

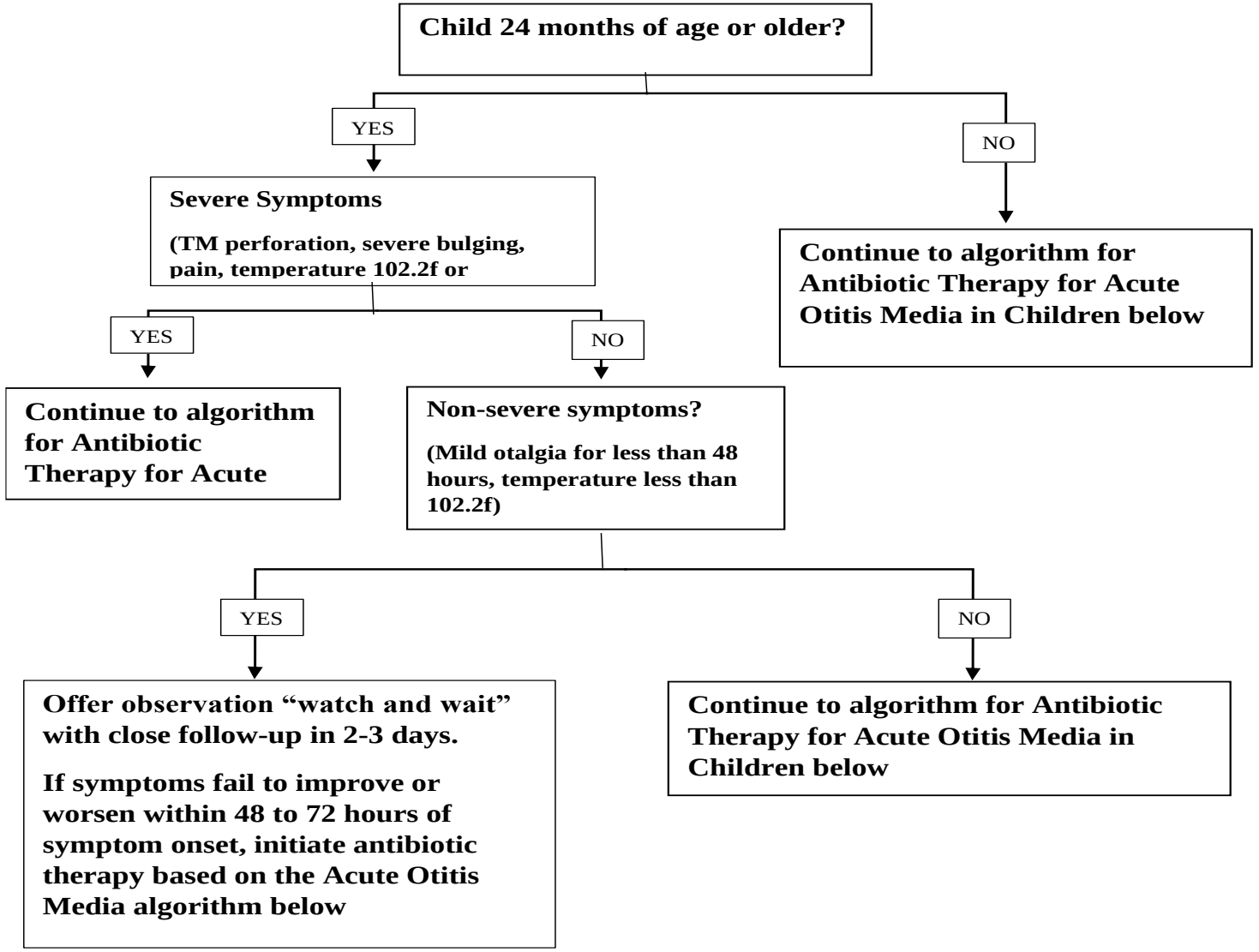
- Make sure your child is up to date on vaccinations and gets a flu vaccine every year. The pneumococcal vaccine protects against *Streptococcus pneumoniae,* a common cause of middle ear infections.
- Clean your hands.
- Breastfeed exclusively until your baby is 6 months old and continue to breastfeed for at least 12 months.
- Don't smoke and avoid exposure to secondhand smoke.

To learn more about antibiotic prescribing and use, visit www.cdc.gov/antibiotic-use.

Criteria For Watch and Wait[3]

Criteria for Watch and Wait Method in Children with Acute Otitis Media

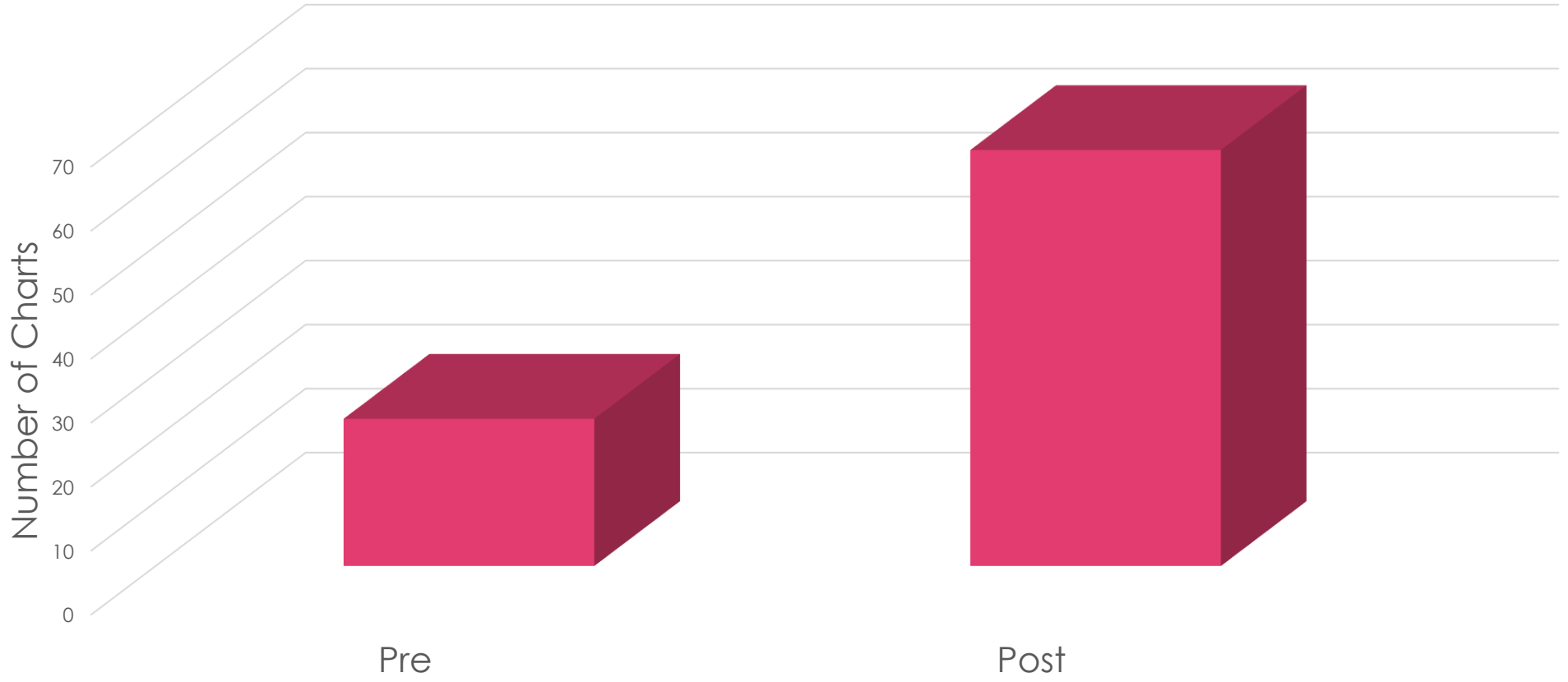
For use in children 24 months and above, if <24 months continue to algorithm for Antibiotic Therapy for Acute Otitis Media in Children below



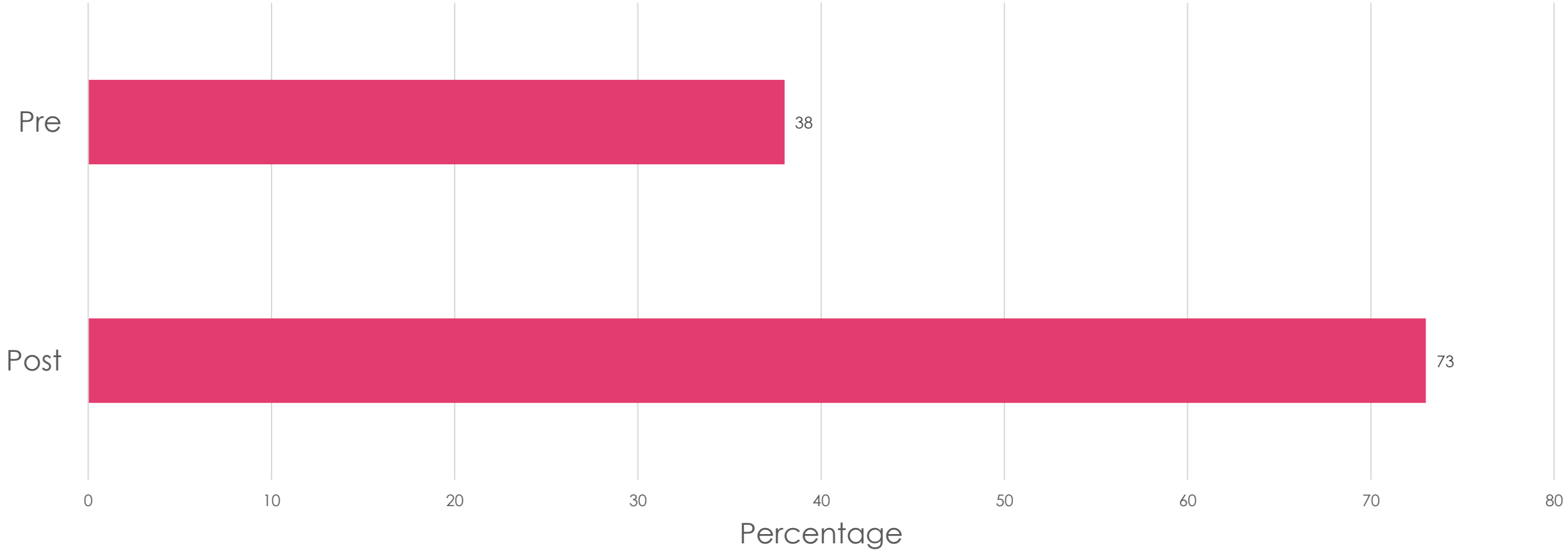
Results

- Total:
  - 60 Charts for pre-intervention audit
  - 91 Charts for post-intervention audit
- Outcomes:
  - Overall **35% increase** in clinical practice guideline algorithm adherence
  - **18% decrease** in antibiotic prescriptions

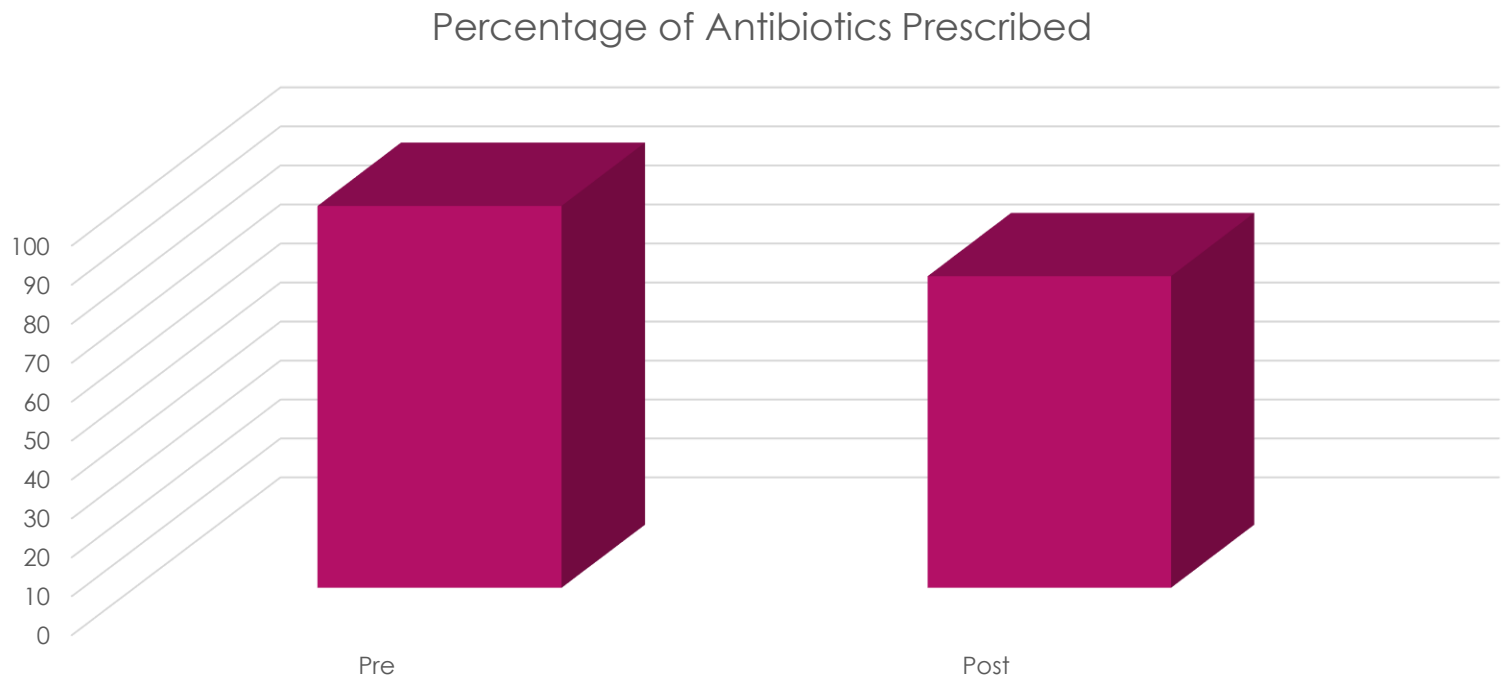
Results – Followed Algorithm



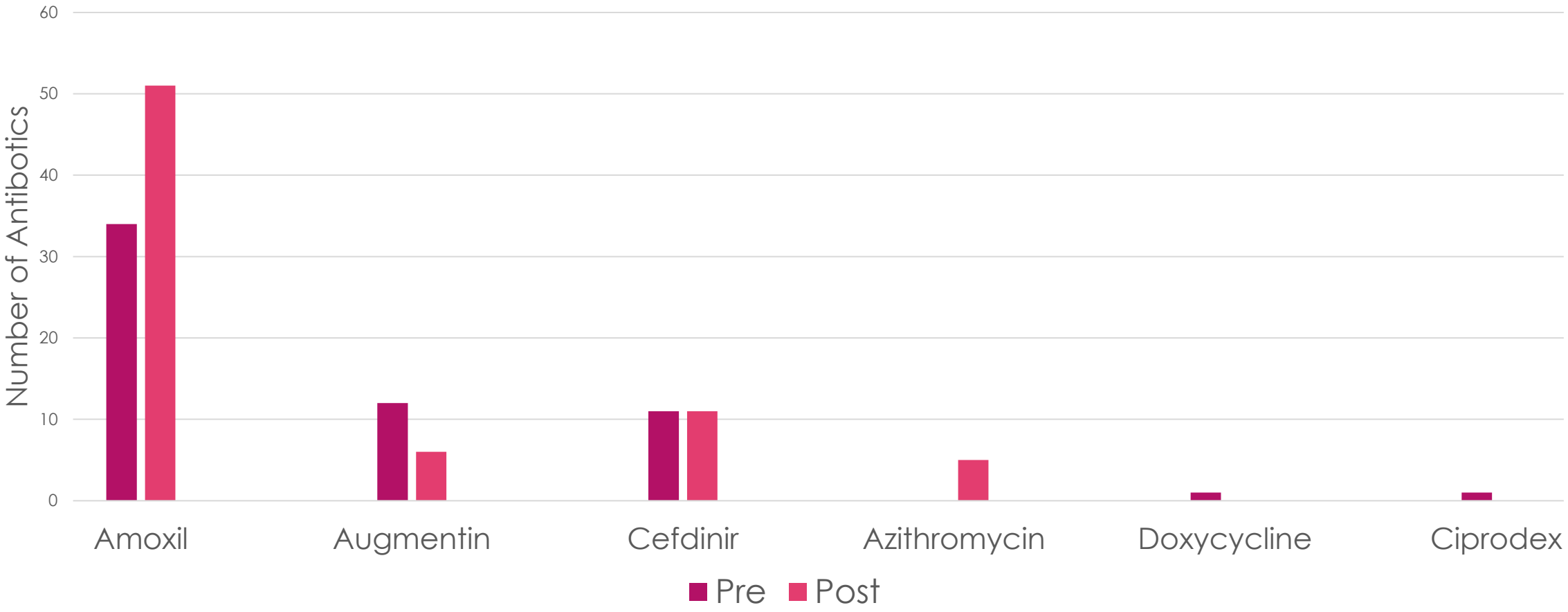
Results – Percentage that followed Algorithm



Percentage of Antibiotics Prescribed



Results – Antibiotic Prescribed



Discussion

- AAFP, AAP, and AAO stress the importance of following clinical practice guidelines
- Increase adherence to clinical practice algorithm through modification of existing and creation of “watch and wait”
- Accurate diagnosis based on history and exam resulted in better management
- Increased adherence from 38% pre- intervention to 73% post-intervention 35% increase.
- Providers satisfied with data

Evaluation and Sustainability Plan

- Continue Monthly and bi-Monthly education to providers along with nurses
- Remain up to date on current recommendations
- Propose “watch and wait” algorithm for primary care, pediatric, and ear, nose, and throat clinics at Greater Regional Health
- Continue to present education to the public through advertisements and social media pages

Strengths and Limitations

- Strengths
  - Large number of charts
  - Easy-to-follow algorithm
- Limitations
  - Single, rural Urgent Care and Emergency Department only
  - Timing of the year
  - Unknown if educational posters utilized by caregivers/patients in the room

DNP Implications

- Leadership
  - Negotiation and Conflict engagement NCR620 – Strategies to help with implementation
  - Dynamics of Conflict Resolution and Engagement NCR624 – Strategies to assist with questions and concerns related to project
- Policy
  - Ethics in healthcare MHE607 – ensuring ethical interventions without harm to providers or patients
- Clinical
  - Epidemiology NUR 684– Up to date recommendations, recognizing trends
- Scholarship
  - Moving forward with dissemination via manuscript

Questions?

Email and Contact Information

- Jessica M. Crandall, ARNP-FNP-BC
- Phone: 989-225-3316
- Jcr54926@creighton.edu

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